**University of Alberta**

# Promoting Healthy Child Development:

# A Population Health Approach

By

Darcy Sunray Fleming

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of the

Requirements for the degree of Doctor of Philosophy

Department of Educational Psychology

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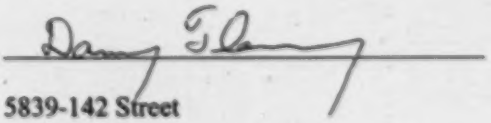

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**Abstract**

The first four years of life are a sensitive time for experience dependent neurological development. Capacities essential for meeting goals and overcoming challenges develop during this time and affect health throughout the lifespan. Capacities emerge naturally as children actively observe, imitate, negotiate, and practice the routines, concepts, and skills that surround and involve them. Characteristics of children their families, schools, communities, and governments all influence development and consequently health. This thesis is concerned with efforts to promote healthy child development in Canada. This thesis is composed of three distinct, but related papers. The first paper examines health and development broadly. The population health approach along with an ecological model are presented as useful frameworks to examine factors that affect development and coordinate intervention, prevention, and promotion efforts. Poverty is used as an example to highlight the complexity of multiple risk and protective factors operating simultaneously. Different intervention approaches that target children living in conditions of poverty are reviewed and discussed. The second paper examines theory and research regarding the role of parents in the development of their child's language, problem-solving skills, social and emotional competence, and self-efficacy during the first four years of life. Based on this examination, two particular parenting strategies, contingent responsiveness, and scaffolding, were considered essential. One parent training approach, the Natural Teaching Strategies (NTS), developed to teach these strategies was presented and examined. The third paper reports on the results of a randomized control trial examining the effectiveness of the NTS intervention at

improving the quality of parent-child interactions over and above the effects of Head Start. Twenty-nine families considered to be at-risk due to conditions of poverty participated in the research study. Results suggest that parent's behaviour in interaction with their children was significantly affected by the intervention in ways consistent with the teaching objectives. Implications for practice and research are discussed. The thesis concludes with a broader discussion of promotion, prevention, and intervention efforts necessary to promote the healthy development of all Canadian children.

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# Chapter 1

## Introduction

# Chapter 1

## INTRODUCTION

Psychology as a social science is still relatively young. The last 100 years have been a time of foundational work exploring, identifying, and testing hypotheses regarding mind, brain, behaviour, and motivation. A strong adherence to the scientific methodology has led to efforts to control conditions and reduce complexity. Fields of study have become more delineated and specialized with their own language and models. Furthermore, exponential growth in the number of publications within each field renders information difficult to synthesize.

Perhaps as a consequence, a new paradigm is being embraced. This paradigm is relational, integrative, and dynamic, and is reflected in theories and models such as interactionism (Vygotsky, 1994), dynamic system theories, transactional ecological models (Bronfenbrenner, 1974; Sameroff, & Fiese, 2000), psychobiological models (Gottlieb, 1983; Gottlieb, Wahlsten, & Lickliter, 1995), and connectionism (Plunkett et al., 1997). This shift replaces notions of linear causality with notions of complex bidirectional and synergistic effects. Although there is no common term to characterize this new paradigm, it will be referred to in this chapter as 'complex interactionism.'

### Examining Development

From a complex interactionist perspective, human development is considered the consequence of bidirectional person-environment transactions over time. The term transaction is used to emphasize that individuals play an active role, not only in their own

development but also in transforming the physical and social environments they are exposed to and embedded in. Complex interactions involve operations of multiple factors operating within individuals, between individuals, between individuals and their physical and social environments, and between different levels of society.

Individuals are feeling, thinking, and behaving, biological systems that use these processes to determine, sense, perceive, and respond to aspects of a changing social environment. All behaviour, therefore, requires simultaneous functioning across and between psychomotor, cognitive, social-emotional, and biological (i.e. neurological) domains regardless of whether the behaviour is in the service of a primarily cognitive, social, or emotional goal.

Individual capacities are generalized abilities or skills necessary to achieve desired outcomes. According to Antonovsky (1996) what all capacities have in common, is that they foster repeated life experiences that help one to see the world as making sense, cognitively, instrumentally, and emotionally. These experiences motivate people to address challenges (meaningfulness), enhance their ability to understand current and future challenges (comprehensibility), and support the attitude that one can utilize available resources to meet challenges (manageability) (Antonovsky, 1996). The importance of well developed and integrated capacities for enhancing or maintaining good health leads to the interesting issue of how these capacities develop. A further issue, one that is of particular interest to health care workers and policy makers, is whether the development of critical capacities can be enhanced through promotion and/or intervention strategies.

Capacities emerge naturally as children actively observe, imitate, negotiate, and practice the routines, concepts, and skills that surround and involve them. Children require repeated opportunities to observe and practice developing skills in different contexts. Parents play a seminal role in the developmental process because infants' early experiences with the physical and social environment typically occur in the context of the family. Parents function to guide, encourage, and support children's naturally developing initiative to control their physical and social environments in socially acceptable ways. From the beginning parents provide a structure through which children experience the world. Through the provision of functional and play routines, children begin to anticipate and therefore act meaningfully on their environment. Furthermore, parents go about controlling the environment in full view of developing children, revealing causal and controllable relationships. Parents directly teach specific behaviours and skills, and provide feedback. Finally, parents naturally engage children in activities that require communication, problem solving, emotional regulation, social skills, and motivation to decide on and achieve personal and shared goals. The potentially powerful role that parent's play in the development of valued capacities highlights the potential of parent training interventions to enhance healthy child development.

The development and implementation of parent training interventions require: (a) an understanding of the developmental process, (b) the identification of people, processes, and outcomes targeted for change (c) a clear logic where the mechanisms through which interventions are presumed to have their effects are clearly outlined, (d) testing the effects of interventions on the identified targets, and (e) examination of

parameters that may lead to differences in effectiveness, both in the characteristics of the targets, different aspects of delivery, and particular combinations of both.

## Purpose of the Thesis

The purpose of the present thesis is to rationalize and test a particular approach to parent training, the Natural Teaching Strategies (NTS), as one form of early intervention. Four of the five requirements of developing an intervention approach previously identified are addressed in this thesis. In this thesis there are three papers, and each informs the above stated requirements.

An understanding of the developmental process: Developing an understanding of the processes of development is difficult because it is complex. Models of development are covered in both paper 1 and 2 in the present thesis. In the first paper, development is considered broadly as a social phenomena deeply interconnected within complex social and environmental conditions. In the second paper early childhood development is considered an interactive process between the child and their environment. Given that children's early experiences typically take place within the context of the family particular consideration is given to parents as primary environmental agents. Together, these examinations are intended to complement each other and provide a fuller picture of the developmental process including the identification of factors that affect development.

The identification of people, processes, and outcomes targeted for change: In paper 1 arguments are made for the need to both target parents of children who are at considerable risk for developmental problems, as well as providing parent training to all parents. The processes targeted by the NTS are discussed in paper 2 and involve parent interactional styles characterized by the use of contingent responsiveness and scaffolding

strategies. The intended outcome of the NTS parent training intervention is healthier child development. Healthy child development is operationalized in paper 1 as the acquisition of capacities necessary to cope effectively and meet personal and shared goals. A list of important capacities is presented in paper 1.

A clear logic where the mechanisms through which interventions are presumed to have their effects are clearly outlined: This logic is provided in paper 2 where particular parenting processes (contingent responsiveness and scaffolding) are discussed. A rationale of how the use of these processes lead to the development of particular child capacities (self-efficacy, emotional regulation, language, problem-solving, and social skills) is also presented.

Testing the effects of interventions on the identified targets: In Paper 3, the results of a randomized control trial examining the effectiveness of the NTS parent training intervention on the targeted processes That is, the effects of the intervention on parents use contingent responsiveness and scaffolding strategies were examined. No measures of child outcomes were reported.

Paper 1: Exploring the Determinants of Healthy Child Development

The purpose of this paper is to examine broad issues of healthy child development. This paper may be considered as a general review of the literature relevant to examining healthy child development and identifying persons, process and outcomes that could be targeted for intervention. The paper begins with a discussion of issues related to measuring and defining health. Definitions of health and healthy child development are discussed. Factors associated with healthy child development are identified and placed within an ecological framework. Poverty is used as an example to

explore the complexity of multiple risk and protective factors operating simultaneously. Different intervention approaches that target children living in conditions of poverty are discussed in terms of the risk and protective factors they are intended to address. The paper concludes with a broader discussion of promotion, prevention, and intervention efforts necessary to promote the healthy development of all Canadian children.

Paper 2: Enhancing Healthy Child Development through Natural Teaching Strategies

The purpose of this paper is to examine how interactive experiences with a responsive and skilled adult lead to the development of language, problem solving skills, social competence, the ability to regulate emotions, and a sense of self. This paper begins with a discussion of the interactive nature of development. It is argued that capacities necessary to control one's environment are social tools that emerge naturally as children actively observe, imitate, negotiate, and practice the routines, concepts, and skills that surround and involve them. Theory and research regarding the role of parents in the development of their child's language, problem solving skills, social and emotional competence, and self-efficacy during the first four years of life are then explored. One parent training approach, the Natural Teaching Strategies (NTS) (McDonald, Kysela, Alexander, & Drummond, 1996) that systematically teaches a set of knowledge, skills, and abilities necessary to fulfill these roles will be presented. This presentation includes a table outlining how the knowledge, attitudes, and skills taught within NTS operate to enhance valued capacities during early childhood. This paper concludes with a discussion of the limitations of parent training as a comprehensive way to promote the development of children.

Paper 3: Parent Training: Can Intervention Improve Parent-Child Interactions?

This paper reports on the results of a randomised control trial examining the effectiveness of a parent training intervention aimed at improving the quality of parent-child interactions as an add on to a Head Start early intervention program. Participating children were at-risk for mental health problems due to poverty and/or their parents' lack of educational attainment, and single parenthood. Twenty-nine families were included in analysis of treatment effects. Results are presented along with directions for future research and practice.

This thesis concludes with a discussion of research and practice implications for the promotion of healthy human development. This discussion utilizes the population health approach and ecological model presented in Paper 1 to identify needed promotion, prevention, and intervention strategies.

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# Chapter 2

## Exploring the Determinants of Healthy Child Development

# Chapter 2

## EXPLORING THE DETERMINANTS OF HEALTHY CHILD DEVELOPMENT

The promotion of healthy human development is the implicit mandate of psychology and other related human disciplines. Advances in our understanding of the developmental process and the circumstances, conditions, and factors that affect health have led to transformations in how we define and address health issues. Healthy child development is identified as a key determinant of health (Health Canada, 1999) and is one of the determinants that the field of developmental psychology is in a privileged position to address.

The purpose of this paper is to draw on relevant theory and practice from the field of developmental psychology to build on the population health initiative. This paper begins with a discussion of difficulties in defining health. After presenting a brief overview of the population health approach, an ecological framework is used to identify factors that affect healthy child development. Personal resources that both characterize and are necessary for healthy child development are identified. Furthermore, environmental factors or social resources that affect healthy child development are identified and situated within the ecological framework. Finally, poverty, a particularly complex environmental factor, is used as an example to explore the complexity and interrelationship between risk and protective factors operating on and between different ecological levels. Targeted intervention models and programs are explored as potential

strategies to promote health. The paper concludes with a discussion of implications for policy and practice.

## Defining Health

Health is defined in the World Health Organization (WHO) constitution of 1948 as: "A state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity." (WHO, 1986). Unfortunately, definitions of well being are not generally agreed upon or clear. According to the Canadian Oxford Dictionary, for instance, "well" is defined as "1.(usu.predic.) in good health; free or recovered from illness" , and wellness is defined as "the state of being well or in good health." (Barber, K. (Ed.), 1998). The circularity of these definitions obscures our understanding and our ability to measure or evaluate health.

The difficulty in objectively defining health or wellness is a consequence of the fact that health is relative, multidimensional, and dynamic. Health is relative in that we generally do not consider there to be absolutes along a health dimension. Consequently, health is often evaluated relatively, or on the basis of the number of either positive or negative symptoms or traits. Health is multidimensional in that individuals may be considered well or ill within different spheres of human functioning, e.g., mental, spiritual, physical, social, and emotional health. Finally, health is a dynamic process that changes over time.

Due to such complexity, some authors advocate a different way of conceptualizing health. The current definition of health, endorsed in the 1986 Ottawa Charter for Health Promotion, defines health as a resource for daily living and not an outcome at all (WHO, 1986).

> Within the context of health promotion, health has been considered less as an abstract state and more as a means to an end. Thus it can be expressed in functional terms as a resource which permits people to lead an individually, socially, and economically productive life. Health is a resource for everyday life, not the object of living. It is a positive concept emphasizing social and personal resources as well as physical capabilities (WHO, Geneva, 1986).

Viewing health positively, as a resource for daily living, provides a better framework for efforts to enhance health than definitions that focus on illness (Antonovsky, 1996). Illness prevention is generally less effective at enhancing health because it targets factors that are relevant to particular threats to health, rather than on health directly and holistically. Redefining health as a positive construct has resulted in research efforts that go beyond the identification of risk factors to an examination of protective factors. Protective factors are considered traits, conditions, situations, and/or episodes that appear to alter or even reverse predictions of negative outcome and enable individuals to circumvent life stressors (Bernard, 1995; Garmezy, 1991; Rak & Patterson, 1996; Segal, 1986).

> The importance of this research to the prevention field is obvious: If we can determine the personal and environmental sources of social competence and wellness, we can better plan preventive interventions focused on creating and enhancing the personal and environmental attributes that serve as the key to healthy development. According to this

perspective, personality and individual outcomes are the result of a transactional process with one's environment (Bernard, 1995, p.7).

Treatment, intervention, prevention, and promotion approaches to enhance health each have a unique profile of costs and benefits. They differ on the basis of whom they target, what they target, how they are presumed to operate, and the timing of their implementation. These approaches and their implementation lack an overarching structure leading to a patchwork of services with gaps and overlaps.

A system to synthesize information and coordinate programs is required. This system must be broad enough in scope to accommodate information from various fields of inquiry but specific enough to make functional use of that information. The Population Health Approach, endorsed by the federal, provincial, and territorial ministers of health (Health Canada, 1999), is an appropriate approach to develop such a system. The population health approach, however, is still in its infancy and considerable work is required to develop a theory and evidence base from which realistic policies and strategies can be developed to address and promote health.

## Population Health Approach

In 1994, a population health approach was officially endorsed in the "Strategies for Population Health: Investing in the Health of Canadians" report. "The population health approach explores the ways in which health is determined by the interaction of individual characteristics and endowments, the physical environment, and social and economic factors" (Health Canada, 1999, p.6).

Within the population health approach, 12 broad domains of factors are identified as determinants of health. These factors are further broken down into population and individual level determinants of health. Generally speaking, population level determinants of health are characteristics of the entire social environment within which the population exists, and operate on all of its members. Population level determinants include: (a) income and social status, (b) social support networks, (c) education, (d) physical environments, (e) health services, (f) employment and working conditions, (g) gender, and (h) culture (Health Canada, 1999). Individual level determinants, on the other hand, refer to characteristics of individuals and the environments particular to them. Individual level determinants of health include: (a) biology and genetic endowment, (b) personal health practices, (c) individual capacity and coping skills, and (d) healthy child development (Health Canada, 1999).

The population health approach is inherently developmental considering current and future health as a consequence of one's individual pathway through life (Health Canada, 1999). Healthy child development operates as a key determinant of health precisely because early experiences are presumed to have important latent effects. Early childhood development is thought by some to be a particularly sensitive time when considerable neurological development is taking place (McCain & Mustard, 1999). Structurally, synaptic connections between nerve cells (cell assemblies) are developed (neural differentiation), maintained, or destroyed (neural pruning) as a consequence of neuro-chemical changes brought about by experience (Hebb & Donderi, 1987). Capacities that are developing during the first four years of life are foundational and form a framework from which new experiences are interpreted and skills and abilities build.

Further, it is during these formative years that a sense of agency and self is emerging (Bandura, 1997). It is argued that "during development, information from genetic sources, the material environment, and biological and social environments all contribute in complementary ways and at critical times during neural differentiation to forge competencies for the current ecology of the individual" (Cynader & Frost, 1999, p.154).

Both population and individual level determinants are included within a population health approach because they are codetermined i.e., a population is made up of individuals. The health and wellness of a population, like that of individuals is determined by the interplay between individual and population level factors operating in complex ways. One demonstration of this relationship can be found in longitudinal studies of Rhesus monkeys, where the research suggests two simultaneous processes: (a) the successful development of individual members of a community is intimately connected to the coherent functioning of that community; (b) the coherent functioning of a community is intimately connected to the health and relational skills of its members (Suomi, 1999). Although both top down (environmental factors affect individual health) and bottom up (individual behaviour affects the environment) processes operate, this paper will focus on the former, factors that affect individual health. Discussion will be further limited to factors that affect healthy child development during the first 6 years of life.

Determinants of health typically refer to factors studied at the population level. They are factors generally associated with prevalence of particular outcomes studied across a population, and their effects are presumed to operate across all members of that population. Taking wealth as an example, both the average level of wealth as well as the

distribution of wealth across a population is correlated with particular health outcomes measured as incidence rates across the population. It has only modest utility in predicting a particular outcome for a particular individual. Risk and protective factors represent the unique profile of determinants for a particular individual. Having adequate financial resources, for instance, is considered protective of negative outcomes whereas having limited financial resources places individuals at risk. Risk and protective factors encompass both biological and psychological characteristics of individuals, as well as characteristics of the social and physical environments unique to them (Dunst, 1993; Dunst & Trivette, 1990; Rutter & Garmezy, 1983; Sameroff, Selfer, Barocas, Zax, & Greenspan, 1987). This paper is primarily concerned with risk and protective factors.

## Ecological Model

There has been increasing theoretical acceptance in child development, and in related fields, of the transactional-ecological model of human development in which the human personality is viewed as a self-righting mechanism that is engaged in active, ongoing adaptation to her/his environment (Sameroff & Fiese, 1990, 2000). Further, the interactions between the individual and his or her environment are both multidirectional and complex (Bronfenbrenner, 1974; Sameroff & Chandler, 1975; Sameroff & Fiese, 1990, 2000). Both individuals and their environments are transformed as a consequence of such transactions.

The experiences of the child adapting and interacting with its environment over time affect health by transforming physical capabilities, as well as personal and social resources. These transformations involve physiological changes in the organism and its preparedness to deal with new challenges (physical capabilities). Mastery or adaptive

experiences also develop and strengthen access to attitudes, knowledge, and skills that can be called upon to deal with new challenges (personal resources). Finally, the physical and social environments themselves may be transformed as a consequence of actions of the individual whose health, in turn, is thus affected. Examples include building support networks and the resources to acquire food and shelter (social resources).

An ecological framework requires that one consider the various contexts in which people live their lives. Context is used here to refer to different levels of social aggregation or networks such as family, peer group, school, work, community, city, province, and country. Contexts are often stratified on the basis of their proximity to the target individual working in concentric circles outwards from the micro to the macro. Factors that affect health can be placed within these categories where more distal factors affect more people, but less directly. Factors interact dynamically with other factors operating at the same and different levels.

An ecological framework similar to that proposed by Hertzman (1998) allows us to conceptualize risk and protective factors operating at three levels of social aggregation. At the centre lies the target individual characterized by a unique profile of capacities, characteristics, and biological predispositions. At the first level, or micro level, are factors associated with the physical and social environments that the individual directly engages with (e.g., positive parenting practices, number of close friends). At the next level, or meso level, are factors operating at the level of civil society that can buffer or exacerbate the effects of micro level factors (e.g., type, quality, and accessibility of health promoting programs, level of family support). Finally, at the broadest level of aggregation, or macro level, are provincial, national, or international factors: in particular,

national wealth, income distribution, and the structure of opportunity created by history, geography, and social class that supports or undermines health and well-being (Hertzman, 1998).

> The picture which emerges is of a lifelong interaction between the coping skills and capabilities of the developing individual and SEP (social/economic and "psychosocial") conditions as they present themselves at the intimate, civic, and state level. The dimension of human development emerges as one of the principal components of the SEP conditions which determine health throughout the life cycle (Hertzman, 1998, p. S16).

In the following section risk and protective factors will be identified and situated within appropriate ecological levels. These factors have been drawn from a review of early childhood development and intervention literature. It is very likely that other factors can and do affect healthy child development and these can be added when identified. First, individual level risk and protective factors will be discussed.

## Individual-level Factors

This paper is concerned with the development of individual capacities necessary for healthy human functioning. How one conceptualizes healthy human functioning, however, is firmly embedded within one's beliefs and values. Although there may be some objectivity in the study and understanding of the mechanisms through which particular capacities are developed or enhanced, the choice of which capacities to consider is dependent on the outcomes or qualities one values.

Although there is little or no consensus as to what an optimally developed Canadian citizen would be like, there is some general consensus as to some of the capacities that we value. It should be mentioned that these are capacities valued within mainstream Canadian society, and more specifically, within the traditions of developmental psychology, epidemiology, sociology, and other related social sciences. Valued capacities identified in this paper were selected because they are (a) considered important outcomes of the developmental process or (b) protective factors correlated with positive outcomes or the omission of negative outcomes when they would otherwise be expected to occur.

One of the most important outcomes of preschool development in Canada is that children are prepared to enter into and benefit from the regular school system (Doherty, 1997). School readiness is important because the complex web of early academic failure and early school misbehaviour is associated with lack of school readiness and, in turn, strongly predictive of later school failure, employability, criminality, and psychological morbidity in young adulthood (Doherty, 1997). Doherty identifies five main developmental components to school readiness: physical well being and appropriate motor development; age-appropriate general knowledge; language, and cognitive skills; age-appropriate social knowledge and competence; and emotional health and a positive approach to new experiences.

Greater acceptance of the transactional-ecological model of human development has resulted in research efforts that go beyond the identification of risk factors to an examination of protective factors (Bernard, 1995; Garmezy, 1991; Rak & Patterson, 1996; Segal, 1986). Individual level protective factors are characteristics of individuals,

including skills and abilities that appear to alter or even reverse predictions of negative outcomes and enable individuals to circumvent life stressors (Bernard, 1995). A list of individual level protective factors is presented in Table 2.1.

Individual level protective factors are considered characteristics of the biological, emotional, cognitive, and social systems previously discussed. Being able to regulate sensory information, having an easy-going temperament, having physical talents, being hardy, and being active are psychomotor capacities associated with resilience and are protective of negative life outcomes. Cognitive capacities include attention regulation, language, reading, problem solving, critical thinking, and decision-making skills. Social capacities such as social regulation, interpersonal relationship skills, communication (verbal and gestural) skills, cooperation, social engagement, responsiveness, support seeking, and self-care skills have all been associated with better outcomes despite risk. Finally a plethora of emotional capacities are considered protective factors and include: emotional regulation, feelings of optimism regarding the future, a sense of responsibility, strong although realistic self-efficacy beliefs, motivation, a sense of purpose in life, perseverance, empathy, humor, and autonomy.

Table 2.1.

Valued Capacities for Everyday Living

| Psycho-motor | Cognitive | Social | Emotional |
|---|---|---|---|
| physical well-being and appropriate motor development [2, 6] | age-appropriate general knowledge, language and cognitive skills [6] | age-appropriate social knowledge and competence [1, 2, 6] | emotional health and positive approach to new experiences [6, 3] |
| sensory integration [8] | attention regulation [5] | social regulation [5] | emotional regulation (managing stress) [2, 5, 7] |
| easy going temperament [4] | language skills [1,2,7] | interpersonal relationship skills [7,8] | feelings of optimism regarding the future [1] |
| physical talents [2] | problem solving [1,4,7] | communication skills [1,2,7] | sense of responsibility [1] |
| hardiness [4] | reading skills [1] | cooperation [4] | self efficacy [1, 3, 4] |
| activity [4] | decision making [7] | social engagement [4] | motivation [2] |
| health [2] | critical thinking [7] | responsiveness [4] | purpose in life [2] |
| | | support seeking [1] | perseverance [2] |
| | | life skills [2] | empathy [2,7] |
| | | | humor [2] |
| | | | autonomy [3,4] |

References

[1] Mangham, Reid, McGrath, & Stewart, 1994.

[2] Kumpfer, 1999

[3] Garmezy, 1991

[4] Health Canada 1999

[5] Keating & Miller, 1999

[6] Doherty, 1997

[7] World Health Organization 1986

[8] Greenspan, 2000

## Micro-level Factors Affecting Healthy Child Development

Many micro level risk and protective factors affecting early child development have been investigated and proposed (McCain & Mustard, 1999). Factors such as nutrition (Dunst, 1993), shelter (Bradley et al., 1989; Dunst, 1993), stimulation (Bernard, 1995, Bradley et al., 1989), encouragement (Franz, McClelland, & Weinberger, 1991), attachment (Cohn, 1990; Easterbrooks & Lamb, 1979), parental mental health (Honig, 1986), and parenting style (Dekovic & Janssens, 1992; Petit, Harrist, Bates, & Dodge, 1991; Schaffer, 1992), have all been investigated and are correlated with later outcomes. The relative quality and/or quantity of these factors can have either positive or negative effects on health.

A goodness or poorness of fit between the child and her environment is often of major importance (Chess & Thomas, 1991, 1992). A goodness of fit exists when the demands and expectations of the parents and other people important to the child's life are compatible with the child's temperament, abilities, and other characteristics. With such a fit, healthy development can be expected (Chess & Thomas, 1992).

## Meso-level Factors Affecting Healthy Child Development

For preschool-aged children micro level factors typically operate within the context of the family. Consequently, factors that affect the family have an indirect although powerful effect on the child. Factors such as social support for parents (Lindahl, 1998; McCubbin, McCubbin, & Thompson, 1993), income, employment, family structure (Lefebre & Merrigan, 1998), access to resources, and the family's ability to adjust to demands and stress (McCubbin et al., 1993), are just some of the family level factors that determine the health of the child (Dunst 1993; McCain & Mustard, 1999).

These in turn affect and are affected by more distal meso-level factors such as affordable housing, employment opportunities, the kinds of community resources available, their accessibility and quality, and the way these programs are delivered.

## Macro-level Factors Affecting Healthy Child Development

According to the National Forum on Health: Determinants of Health Working Group Synthesis Report (1997), child poverty, unemployment, youth underemployment, involuntary retirement, labor force restructuring, cuts in social programs, decreases in real income, income inequities, the disintegration of communities as we once knew them, single parenthood, and the ever-increasing pressures of work on families are factors that operate at the population level to determine health.

It is essential that our research take the crucial step of moving from statistical risk indicators to an understanding of how risk mechanisms operate. Unless we have that knowledge, our efforts in the field of prevention and promotion are likely to be inept and ineffectual. The population health approach presumes causal relations between determinants and health. The ecological framework presented in this paper may prove useful in examining how risk and protective factors operate and could be used to guide the development and evaluation of interventions.

## The Example of Poverty

At both an individual and population level of analysis, perhaps the best environmental predictor of health and developmental outcomes is some measure of relative affluence, or socio-economic status (SES) (National Forum on Health, 1997).

Within the population health approach, income and social status are identified as key determinants of health. However, the causal link between low income and negative

life outcomes must be an indirect one, since a lack of financial resources in itself does not lead children to develop less optimally than they would otherwise. The role of poverty, then, can best be described in probabilistic terms; having low financial resources in a family increases the likelihood of negative life outcomes for children (Seitz, 1990).

The effects of SES on health have been hypothesized to operate as a gradient. To say that SES functions on a gradient in relation to health, is to say that the proportion of children not doing well is higher near the bottom of the scale than it is at the top. In all socioeconomic groups, however, there are some children who do not do well, and this is proportional to where families are on the socioeconomic scale. For example, if 30% of the children in the bottom 20% do not do well, the figure is 25% for the next 20% and so on up the scale (McCain & Mustard, 1999).

Children from impoverished families have higher rates of injury and their injuries are more severe. These children are also over represented in the incidence of child abuse, neglect, and sexual abuse in Canada (National Forum on Health, 1997). A review of other studies indicates that "Children who grow up in poverty show almost three and one-half times the number of conduct disorders, almost twice the chronic illnesses and over twice the rate of school problems, hyperactivity, and emotional disorders as children who are not poor" (Steinhauer, 1996, p.4). Children who grow up in poverty generally perform less well on standardized measures of intelligence and academic achievement (Sameroff et al., 1987; Seitz, 1990). Later life outcomes also tend to be more negative for lower-SES children, including a greater likelihood of becoming a school dropout (US Department of Health, Education, and Welfare, 1975), an increased risk of delinquency

(West & Farrington, 1973), and the likelihood of lower earnings as an adult (Waller, 1971).

There is growing recognition that risk factors typically co-occur, and that multiple risk factors are particularly hazardous because their effects are synergistic rather than simply additive. Many researchers conclude that it is the combination of risk factors in the child's background, rather than the presence of any particular risk factor, that increases the likelihood of a particular negative outcome (Bartko & Sameroff, 1995; Dunst, 1993; Dunst & Trivette, 1990; Pellegrini, 1990; Sameroff et al., 1987). Consequently, it is easy to understand why poverty is such a powerful predictor of health and development. Low income is rarely present in isolation. Low SES is often accompanied by high levels of stress, social isolation, a lack of personal and structural supports, low self-esteem, depression, substance use problems, poor nutrition, history of abuse or disruptive family environments, and a myriad of other personal and interpersonal risk factors (Bartko & Sameroff, 1995; Dunst, 1993; Dunst & Trivette, 1990; Garmezy, 1991).

Consequently, children living in conditions of poverty are less likely to receive the key building blocks of early development such as adequate nutrition, decent medical care, a safe and secure environment, and access to early childhood development programs to supplement learning opportunities in the home (Manning & Baruth, 1995). They are also less likely to develop the cognitive, emotional, and social skills needed for success in school and to support the development of their own children. Hence trans-generational effects may be observed.

Given the enormous personal and social costs associated with children growing up under impoverished conditions, a number of approaches have been developed and implemented that target these children and their families. These efforts can target factors operating at different levels of the ecological system. Efforts to redistribute wealth and to ensure some minimal level of income represent efforts at the macro level. The above observation that multiple risk factors typically co-occur with low income suggests that income redistribution efforts, by themselves, will not be enough. Working with families on the basis of their unique profile of risk and protective factors as they appear at the individual, micro, and meso levels are also essential. The following is a discussion of intervention strategies to promote protective factors and reduce risk factors.

## Intervention Strategies

Human development is conceptualized as an interactive process between the individual and their environment. Consequently, efforts to enhance a child's healthy development can target the individual, the environment, and/or the way they interact. Intervention strategies can be geared to the reduction or elimination of risk factors and/or the development or enhancement of protective factors. The timing, duration, and delivery of services should be guided by appropriate developmental and ecological theories.

For the purpose of this discussion, intervention efforts during the preschool years (ages 3-6) that target both individual and environmental factors will be discussed. Typically, intervention efforts are either targeted at the child, the family, or both. The following discussion introduces child-focused, family-focused, and two-generation interventions that target families and children considered to be at risk. These interventions will be discussed in terms of their objectives, i.e., the promotion of

protective factors or the elimination of risk factors. A general review of effectiveness will be provided for each intervention approach. Finally, implications for policy and practice will be discussed.

## Child-based Interventions

Interventions targeting the child are usually in the form of centre-based preschool programs that are either play-based, such as Head Start programs, or cognitive-based, such as Montessori programs (Bailey, Jr. 1994; Marcon, 1992). Centre-based interventions are designed to promote individual child protective factors through enhancing cognitive, academic, and social skills necessary for formal schooling. These early preschool experiences are hypothesized to have long lasting latent effects on school performance and cognition by initiating a positive cycle of scholastic development and commitment that culminates in improved developmental outcomes in adolescence and beyond. This hypothesis, whether termed, cognitive advantage, fan-spread, or Mathew effect, operates within the latency model or principle (Reynolds, Mavrogenes, Bezruczko, & Hafemann, 1996) wherein initial advantages multiply over time and culminate in better adjustment outcomes.

On the bases of three comprehensive reviews (Barnett, 1995; McKey et al., 1985; Royce, Darlington, & Murray, 1983), the weight of the evidence establishes that early intervention programs, both model and large-scale, can produce large effects on IQ and achievement during the early childhood years and sizable persistent effects on grade retention, special education, and high school graduation. In particular, the evidence for effects on grade retention and special education is overwhelming (Barnett, 1995). Evidence is weaker for persistent achievement effects, but according to Barnett, the

weakness is probably the result of flaws in study design and follow up procedures (Barnett, 1995).

There is also, however, considerable evidence that does not support long-term latent effects of child-based programs (Barnett, 1995; Reynolds et al., 1996; Yoshikawa, 1994, 1995). Performance in cognitive abilities after initial gains still tend to be below that of middle class children and disappear over time (Reynolds et al., 1996).

Children from low income families, even those who have been positively affected by an early childhood intervention program, are much more likely to attend poor quality schools (Ogbu, 1986) where an inadequate elementary grade experience does not support, and may even undermine earlier progress. If parental involvement does not persist, if teachers do not respond positively, or if children are retained in grade or change schools frequently, scholastic development will be impacted and so may the long-term effects of early intervention (Reynolds et al., 1996).

Continuing economic hardship and its resulting stressors may counteract the positive effects of intervention. Developmental continuity is most likely to be facilitated when there is a convergence of support structures in children's family and school environments that persists over time (Reynolds et al., 1996). A second hypothesis, therefore, is the family-support hypothesis (Reynolds et al., 1996). According to this hypothesis, long-term effects of interventions will occur to the extent that the family functioning has been improved and such improvements are maintained. The family support hypothesis is consistent with a pathways approach that emphasizes the cumulative effect of life events along developmental trajectories, and the ongoing

importance of environmental conditions throughout the life cycle (Hertzman & Wiens, 1996).

## Family-based Interventions

Family-based interventions are geared to enhance family functioning. In successful family functioning, families are able to deal with challenges by utilizing their repertoire of strengths and capabilities in adaptive ways. Furthermore, families utilize the resources of their social network and the community (Dunst, 1993). The dimensions of family functioning targeted in family-based interventions, consequently, include stress management, coping and problem solving, parent-child interactions, family resources and supports, and family perspective taking.

Work with families may be classified as either family or parent focused. Intervention or health promotion efforts that train parents to enhance their child's development are considered parent-focused, whereas efforts to support a healthy family environment are family-focused.

### Parent- Focused Interventions

Parents are the most important socializing agents during early childhood. The developmental literature is replete with findings that suggest that parenting behavior is a primary determinant of many developmental outcomes (Ainsworth & Wittig, 1969; Bronfenbrenner, 1974; Cairns, 1986; Cohn, 1990; Chess & Thomas, 1991, 1992; Dekovic & Janssens, 1992; Easterbrooks & Lamb, 1979; MacDonald & Parke, 1984; Pittit, Dodge, & Brown, 1988; Putallaz, 1987; Schaffer, 1992; Waters, Wippman, & Srofe, 1979). Consequently, there has been considerable effort to empirically investigate what

particular aspects of the parent-child relationship are important, and then to develop and test strategies that will facilitate positive parent characteristics, skills, and/or behaviors.

Adult interactions characterized by high responsiveness and low directiveness, appear to be effective in fostering children's development because they encourage children's active engagement in the constructive learning processes of practice, experimentation, choice-making, and problem solving (Mahoney, 1988; Mahoney, Robinson, & Powell, 1992). Furthermore, parents with positive although realistic expectations of child behaviour and abilities are better able to scaffold their children's learning. Consequently, parent training typically involves teaching parents about child development and expected milestones as well as teaching parents how to facilitate child learning and development through caring and supportive natural interactions. These efforts are presumed to enhance micro level protective factors and reduce micro level risk factors increasing parent's confidence and competence in their parenting abilities.

Family- Focused Interventions

Family support services are defined as community-based services to promote the well-being of children and families by promoting a stable and supportive family environment (Yoshikawa, 1995). Some examples of family support services include: home visits, parent support groups, respite care, structured activities to strengthen parent-child relationships, drop-in family centres, information and referral services, and early developmental screening of children to assess their need for special services.

Interventions that teach particular parenting skills are perhaps best thought of as capacity building, whereas interventions that are geared to support the family are attempts at reducing the many risk factors assumed to be in operation. For the most part,

however, there will be considerable overlap if enhancing protective capacities in families is hypothesized to help the family to reduce risks factors on their own (Richardson, Neiger, Jensen, & Kumpfer, 1990). Furthermore, interventions that are geared at reducing debilitating risk factors are often assumed to free up natural protective capacities in families (McCubbin et al., 1993).

The evidence regarding the effectiveness of parent-focused and family-focused interventions is mixed. Both parent-based and family-based interventions can be effective in changing the specific adult behaviors, circumstances, or abilities that were targeted and worked on (Barnes, Goodson, & Layzer, 1996; Olds & Kitzman, 1993; Olds et al., 1997; Ramey & Ramey, 1998; St. Pierre & Layzer, 1998). Few studies, however, have demonstrated consistent effects on the more general environmental circumstances of the family, or child outcomes (Barnes et al., 1996; Olds & Kitzman, 1993; Olds et al., 1997; Ramey & Ramey, 1998; St. Pierre & Layzer, 1998).

The failure of many family-based programs to produce long lasting pervasive changes in the family environment and child outcomes requires explanation. Several factors are likely in operation that reduces the effectiveness of family-based interventions to produce global changes. First, targeted programs work with individuals who are least prepared to benefit from such services. Findings from the Infant Health and Development Project (IHDP) indicate that although considerable positive program effects were observed for children and families with fewer than four risk factors, no positive effects were observed for families that had six or more risk factors (Liaw & Brooks-Gunn, 1994). Second, interventions are often of relatively short duration and intensity and there is rarely continuance of services to maintain any particular gains that were demonstrated

(Reynolds et al., 1996). Finally, interventions that address particular aspects of family functioning are not likely to improve the overall circumstances of families if other areas and supports are not addressed.

It has been determined that only high quality interventions that satisfy certain conditions are expected to lead to improvements in child development (Ramey & Ramey, 1998). Successful interventions are interventions that begin earlier in development, are intense, and continue for at least 2 to 3 years. Interventions should be direct, i.e., target the individual and the skills that are expected to change, and should be conducted in a comprehensive manner that uses multiple routes. Interventions should be sensitive to individual differences, as children and families respond differently to interventions. Either programs need to be flexible, or alternative interventions should be used to provide the best fit between the characteristics and needs of the participants and the focus and characteristics of the interventions. Similarly, interventions need to be carried out in ways, and by individuals, who are sensitive to the cultural and ecological conditions of the participants. Finally, effects of interventions need to be maintained through continued support from programs in the education, social service, and health care sectors (McCain & Mustard, 1999).

The limited success of either family-based or child-based interventions alone has led many researchers, practitioners, and policy makers to consider alternative strategies. The most obvious direct service alternative, and one that is being piloted extensively, is a combination of child and family based services. According to Reynolds et al. (1996), the cognitive advantage and family support hypotheses are not incompatible.

> "Cognitive-related and family-support factors are dual mechanisms through which preschool intervention affects child outcomes. The cognitive-advantage hypothesis emphasizes that enhanced cognitive school readiness provides a foundation for learning that initiates positive transactions during the schooling process. The family-support hypothesis emphasizes that enhanced family involvement in children's learning, and a positive supportive family atmosphere, will provide a critical source of education and social support that promotes children's development over time" (Reynolds et al., 1996, p. 1121).

## Two-generation Programs

Intervention strategies that have applied both child-based and family-based services have, generally, demonstrated greater effectiveness than interventions that are either child-base, or family-based alone (Guralnick, 1993). To be effective, these two-generation programs must also be conducted according to the best practices identified above. Consequently, two-generation programs must provide comprehensive family-centered services that begin earlier, are intense, and are continued until and through grade-school entry. On the basis of two reviews (Wasik & Karweit, 1994; Yoshikawa, 1994), evidence suggests that two-generation programs that provide all three components (child-focused, parent-focused, and family-focused) intensively along with continued follow-up as children enter school, can keep disadvantaged children from falling behind (Yoshikawa, 1995).

One two-generation program, the Perry Preschool program, has been evaluated on the basis of a cost savings analysis (Karoly et al., 1998). Program savings were examined by comparing randomly assigned program and control children on a number of important outcomes through a 25-year follow up. Results of this analysis suggest substantial observed government savings where program costs of $12,148 per family were offset by savings to government estimated at $25,437 per family. Estimated savings in this analysis are very conservative and represent only observed program effects such as: reduction of educational services, taxes from increased employment, reduction in welfare costs, and reduction in criminal justice costs. Further, given that participating children were last followed up when they were 27 years of age, considerable future savings may be expected to occur. Finally, in this program, only child outcomes were evaluated. Karoly and her colleagues (1998) further evaluated the cost effectiveness of a family support only program where considerable savings were observed in the form of greater maternal employment and reduced maternal welfare rates. Transgenerational effects, as well as less tangible personal and interpersonal effects brought about by transformations in peoples' lives may represent significant unmeasured benefits of early intervention programs. Targeted early intervention programs are an important financial as well as human investment.

Yoshikawa (1995) cautions, however, that comprehensive two-generation programming alone should not be counted upon to raise the majority of children out of poverty if other factors operating at meso and macro levels of society are not also addressed. Targeted interventions will have only a limited impact on population levels of mental health problems, crime, and reliance on social assistance because individuals and

families that lie outside the target range of the socioeconomic gradient contribute more to these outcome statistics than do poor children alone. McCain and Mustard (1999), for instance, point out that there is no economic cutoff point above which all children do well, and that because of the size of the middle class, the number of children not doing as well as they might, is greater in the middle socioeconomic group than in the bottom 20% of the scale.

## Conclusion

In Canada we have a long history of provincial and community initiatives and investment in early child development. What has evolved since most of the initiatives were started for specific problems is a patchwork of programs primarily for treatment, rather than an integrated system of centres for early child development and parenting that is readily available and accessible to all young children and families.

> "In view of all the points, it is our view that an evolutionary approach to establishing community-based early child development and parenting centres should be adopted which builds on existing community initiatives. We should use this approach to establish, over time, centres available and accessible to children from all sectors of our society. Because of the importance of the early years and the need for support from all sectors of society, the framework for development and incentives should be designed to involve governments and the public and private sectors in communities (McCain & Mustard, 1999, p. 18).

There is a need for collaborative interdisciplinary research and programming encompassing health promotion, prevention, intervention, and treatment. It is clear that in the area of family health the scope of potential action required is broad, and for some families the need is severe. The challenge will be to utilize the Canadian definition of health that acknowledges the role of health determinants (social support, growth and development, education, adequate shelter, freedom from violence, sustainable income) in combination with the Canadian values (efficiency, performance, equality of access, prevention, freedom of choice, compassion, and flexibility) operationalized in the five principles of the Canada Health Act (universally available, equally accessible, comprehensive, portable, and publicly administered) to address the network of factors that influence the health of families and consequently, their developing children.

Promotion efforts need to do more than just improve direct service delivery and practice. Meso level factors exert either positive or negative influences on individuals. The quality of schools, communities, and places of work affect healthy child development and should therefore be considered within the broader scope of health promotion efforts. Federal level policies, standards, and practices that influence primary determinants of health such as income and social status, social support networks, education, physical environments, health services, employment and working conditions, gender, and culture (Health Canada, 1999) need to be addressed simultaneously. Enhancing the health of all Canadian children requires a pervasive shift in macro level systems such as social attitudes and structures, including economic reforms that address issues of equity. This shift must be accompanied by coordinated meso and micro level programs that build on the strengths of individuals, families, and systems.

Although continued research efforts are required and should ideally be built into such programs, early results suggest flexible, ongoing, integrated approaches to provide the protective elements required to advance the healthy development of our children. In this way, we elevate the well being of our citizens, their communities, and our country.

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# Chapter 3

## Enhancing Healthy Child Development Through Natural Teaching Strategies

## Chapter 3

# ENHANCING HEALTHY CHILD DEVELOPMENT THROUGH NATURAL TEACHING STRATEGIES

Early childhood is a particularly sensitive time where considerable experience-dependent neurological development is taking place (McCain & Mustard, 1999). Furthermore, it is during these formative years that critical capacities such as language, (Bruner, 1983; Courts, 1991; Ollia & Mayfield, 1991), problem solving skills (Kaye, 1982; Meltzoff, 1988a, 1988b), social skills (Crockenberg & Leerkes, 2000), emotional regulation (Crockenberg & Leerkes, 2000), and a sense of agency and self are emerging (Bandura, 1997). These capacities develop through the infant's or young child's transactional experiences with the environment, particularly the social environment. There is now convincing evidence that the development of these capacities is enhanced (McCain & Mustard, 1999) through guided learning and enriching experiences that allow children opportunities to observe, and participate in culturally meaningful practices. Given that the most significant social environment for young children is the family, teaching parents how to engage their children in more optimal ways constitutes a potentially powerful strategy to enhance development and health throughout the lifespan.

The purpose of this paper is to examine how interactive experiences with a responsive and skilled adult lead to the development of key capacities for healthy living. Although capacities necessary to function well within one's current ecology are innumerable and change as one progresses through life, some generalized capacities seem

particularly important for functioning in modern western culture. Language, problem solving skills, social competence, the ability to regulate emotions, and a sense of self are deemed necessary to cope with challenges and obtain personal goals (Health Canada, 1999).

This paper begins with a discussion of interactionist theories of child development. Theory and research regarding the role of parents in the development of their child's language, problem solving skills, social and emotional competence, and self-efficacy during the first four years of life are then explored. Parents as facilitators, or motivators, and parents as teachers receive special attention. One parent training approach, the Natural Teaching Strategies (NTS) that operationalizes a set of knowledge, skills, and abilities necessary to fulfill these roles is presented. This presentation will include a systematic discussion of how the knowledge, attitudes, and skills taught within this intervention operate to enhance valued capacities during early childhood. This paper concludes with a discussion of the limitations of parent training as a comprehensive way to promote the development of children.

## Complex Interactionism

In this paper, human development is considered to be an interactive process that involves progressively more complex reciprocal transactions between an active and evolving bio-psychological organism and the array of persons, symbols, and objects in her or his immediate environment (Sameroff & Fiese, 1990, 2000). The interactionist model of development endorsed in this paper shares many common elements with dynamic system theories, transactional ecological models (Bronfenbrenner, 1974; Sameroff, & Fiese, 2000), psychobiological models (Gottlieb, 1983; Gottlieb et al., 1995)

and connectionism (Plunkett et al., 1997). Common in all of these models is an emphasis on complex reciprocal and synergistic effects of multiple determinants operating over time rather than simple linear additive effects of multiple determinants.

Humans are feeling, thinking, and behaving biological systems that use these processes to determine, sense, perceive, and respond to changing aspects of the physical and social environment. Individual capacities such as social skills, problem solving skills, language, emotional regulation, and self-efficacy are developed through and constitute efforts to control one's environment and achieve desired outcomes. According to Antonovsky (1996), what individual capacities have in common is that they all foster repeated life experiences that help one to see the world as making sense cognitively, instrumentally, and emotionally.

Capacities emerge naturally as children actively observe, imitate, negotiate, and practice the routines, concepts, and skills that surround and involve them. Parents play a seminal role in the developmental process as infants' early experiences with the physical and social environment typically occur in the context of the family. Parents function to guide, encourage, and support children's naturally developing initiative to control their physical and social environments in socially acceptable ways. Parents provide a structure through which children experience the world. Through the provision of routines, both functional (feeding) and play (peek a boo), children begin to anticipate and therefore act meaningfully on their environment (objects and people). Furthermore, parents go about controlling their environments in full view of developing children revealing causal and controllable relationships. Parents directly teach specific behaviours and skills and provide feedback regarding children's performance. Finally, parents naturally engage

children in activities that require communication, problem solving, emotional regulation, social skills, and motivation to decide on and achieve personal and shared goals.

When adult and child interact in such a way that there is a sharing of focus, purpose, roles, and/or emotions, we may say that they are jointly engaged. Episodes of joint engagement are powerful learning opportunities because there is a coupling of novice and skilled interactants (Tomasello & Farrar, 1986). Parents, therefore, must both motivate their child to participate in shared endeavors as well as use these episodes to teach new knowledge, skills, and abilities.

Bornstein (1989) identifies two distinct modes of interaction: social interactions and didactic interactions. The goal of social interactions is the initiation and maintenance of positive face-to-face contact, and is characterized by warm, sensitive, responsive, affectionate, non-restrictive parental care. The goal of didactic interactions is to stimulate children's knowledge and awareness of external objects or events. Here parents introduce, mediate, and interpret aspects of the external world providing opportunities to observe, imitate, speak, and learn (Bornstein, 1989).

Both social and didactic modes of engaging infants and young children are associated with positive parenting practices and superior child outcomes. Rarely, however, are parent-child interactions solely social or didactic. Parents, for instance, may use the comfort of social interactions to comment on external events or may use the content of social interactions i.e., thoughts, feeling, and or emotions in the service of imparting new knowledge. Rather than refer to discrete modes of engagement this paper refers to strategies. Contingently responding to child behaviour, interest, and emotions is

an important strategy to maintain interactions, and scaffolding is important to facilitate learning.

Contingent responsiveness is essential for good parent-child transactions. Good parent-child transactions require participants to communicate at the same level, focus on something that both find interesting, and take turns. Children's limited cognitive, social, and emotional abilities require parents to adapt their behaviours to meet these objectives. Parents must adapt their behaviour to the interest and communicative level of the child in a way that interests the child and maintains balanced turn taking. When parents are accurate in their judgments regarding the intentions, interests, and emotions of their children, parents can more effectively teach new knowledge, skills, and abilities.

Scaffolds are strategies that parents use while engaging children that build on what the child already knows and extends this knowledge. Scaffolding involves activities such as: interesting the child in the task, reducing the number of steps required to solve a problem, maintaining the pursuit of the goal, marking crucial features or discrepancies between what the child has produced and the ideal solution, controlling frustration and risk in problem solving, and demonstrating an idealized version of the act to be performed. Scaffolding has been characterized as acting on the motto of "Where before there was a spectator, let there now be a participant" (Bruner, 1983, p.60). Over time, caregivers systematically shape joint experiences in such a way that the child will take greater and greater responsibility for shared endeavors. Scaffolding not only provides support but also allows caregivers to model appropriate comprehension-fostering activities whereby crucial regulatory activities are made overt and explicit.

Contingent responsiveness and scaffolding are natural strategies all parents apply to varying degrees that build on naturally developing capacities within typical day to day transactional experiences. Parents who are responsive to their infant's communicative behaviour create opportunities for efficacious actions by providing an enriched physical environment, with freedom for exploration and varied mastery experiences (Wakschlag & Hans, 1999). As a result, their children are relatively accelerated in their social, linguistic, and cognitive development (Bornstein, 1989; Ruddy & Bornstein, 1982; Yarrow, Rubenstein, & Pedersen, 1975).

Contingent responsiveness and scaffolding are integrally connected and both are applied in positive engagements. Parents must match their roles and strategies to the interest and emerging capacities of their children. According to Bandura (1997), infants require positive attention/reinforcement, which builds self-efficacy, causal thinking, and emotional regulation. It is perhaps interesting to note that in this situation contingently responding to infant behaviour scaffolds their learning of causal relationships and self-awareness. Later as children move out into the world and cause things to happen for themselves, parents may spend more time guiding and structuring learning experiences. Contingent responsiveness and scaffolding are again linked in that scaffolding effectively requires taking the child's interests and abilities to heart. Children communicate their enjoyment, and interest in activities. Parents' must be sensitive to these cues if they are to scaffold effectively.

In the following section we explore how early positive experiences during social interaction with a contingently responsive adult facilitator can lead to a generalization of positive developmental effects in different domains of functioning. The purpose here is to

articulate how early positive interactive experiences can facilitate the development of self-efficacy, emotional regulation, language, problem solving, and social skills.

## Self-Efficacy/Sense of Self/Causal thinking

### Theory

The newborn arrives without any sense of self. The self must be socially constructed through transactional experiences with the environment. The initial interactive experiences that contribute to development of a sense of personal agency are tied to infants' ability to control the sensory stimulation from manipulable objects and the attentive behaviour of those around them (Bandura, 1997). Controlling the attentive behaviour of parents has been hypothesized to be more instrumental to the formation of early causal thinking because infants lack skills necessary to meet their own needs and to manipulate objects and observe their effects.

Overt behaviours of the infant (smiling, crying, reaching, or turning) in response to internal (hunger, arousal) and external stimulation, are often responded to by parents immediately and accurately as a smile leads to smile back, crying leads to comfort or feeding, and reaching leads to being picked up. Accurate responses to these overt behaviours lead to a sense of controllability by providing enough successive pairings of infant behaviour to meeting of needs, that the relationship becomes discernable to the infant.

Proximal contingent experiences, whether they occur directly or are revealed by the actions of others, create a causal cognitive set to look for relations between events when the actions are less clearly related to their effects. As infants begin to sense that they can produce effects, they engage in exploratory activities in which they vary their

actions and observe what outcomes flow from them. Infants who experience success in controlling environmental events by their actions become more attentive to their own behaviour, more active in their engagements with objects, and more competent learners than infants for whom the same environmental events occur regardless of how they behave (Bandura, 1997; Dunham, Dunham, Hurshman, & Alexander, 1989).

## Practice

The informative value of contingent experience for personal agency can be greatly enhanced by creating conditions that encourage infants to try controlling actions by linking outcomes closely to actions, by using aids to channel infants' attention to the outcomes they are producing, and by heightening the salience or functional value of the outcomes (Bandura 1997). Microanalyses of familial interactions (Papousek & Papousek, 1979) show that parents naturally structure contingent experiences in ways that help infants discover that their actions have social effects. Parents, for instance, establish close eye contact with their infant to ensure adequate attentiveness. They react to their infant's actions quickly and animatedly to create highly noticeable proximal effects. Further, to aid the infant's perception that actions produce outcomes, the transactions are often repeated in rapid succession. Finally, parents often engage their children in game or play routines that highlight cause and effect relationships, such as imitation games and peek-a-boo (Papousek & Papousek, 1979). In all these examples, parents respond contingently to infants interests but in particular ways that scaffold their infant's awareness of causal relationships.

## Evidence

Longitudinal studies in which parents are explicitly taught how to provide their infants with experiences of mastery demonstrate that enabling influences during infancy build a sense of agency conducive to cognitive development. Infants who are taught how to be causative are more cognitively competent in childhood than those who have not had the benefit of these early mastery experiences (Bandura, 1997). Premature infants of disadvantaged, unmarried mothers make big gains in cognitive development when mothers are taught how to give them challenging tasks that encourage them to initiate activities and produce effects with manipulable objects (Scarr-Salapatek & Williams, 1973). The more enabling mastery activities the mothers provide their infants, the better is their cognitive development.

When infant behaviours are not responded to immediately and accurately, the infant experiences distress. Under conditions of stress, a series of hormones are secreted that increase the heart rate, alter the processing of glucose, and dilate the pupils (Cynader & Frost, 1999). Chronic stress, or conditions of stress that are uncontrollable can cause depression of the immune system and impair brain functioning. According to Cynader and Frost (1999), "There is evidence that repeated and prolonged exposure to stress hormones cause neurons to die. Further, emerging evidence suggests that neurons in the brain that are most ready to learn (i.e., those that are within their critical periods) are the most vulnerable to the cell death and degeneration associated with chronic stress" (p.174-175). Consequently, contingently responding to infant needs decrease infant distress and thereby support infant states that are more conducive to learning.

## Emotional Regulation

### Theory

Infants lack the ability to effectively regulate their attention, emotions, or social interactions (Hertzman & Weins, 1996). Strategies that infants develop to regulate their emotions during the first year of life are thought to underlie secure attachment relationships, and to contribute to the achievement of autonomy and mastery in the second and third years of life. Parent-infant interactions are the primary context in which emotional regulation begins to emerge. According to Field, Healy, Goldstein, and Guthertz (1996), in normal mother-infant interactions, the mother regulates her behaviour to meet the needs of her infant so that the infant is appropriately stimulated. Optimally, the mother's and infant's attentive and affective behaviours become synchronized (Field et al.). The regulatory aspects of these synchronized relationships protect infants from over- or under-stimulation and help the child maintain pleasure in intimacy and a secure, alert, attentive state that permits new learning and development to occur.

### Practice

Emotional synchronization is an excellent example of how contingent responsiveness is essential to the development of emotional regulation. Examples of scaffolding include the way parents assist their infants in alleviating negative emotions, reinforce positive emotions, and structure the environments in which infants experience emotions (Crockenberg & Leerkes, 2000). Beyond this, parents influence how infants interpret situations by modeling emotional reactions to persons, objects, and events. As children get older, parents often talk with their children about emotions and provide

meta-strategies to deal with them, (e.g. count to 10, take deep breaths) (Crockenberg & Leerkes).

### Evidence

Evidence that supports the important role of parents in children's development of emotional regulation comes from instances where these processes break down. In the depressed mother-infant dyad, the depressed mother is often emotionally unavailable or affectively unresponsive: consequently, the infant may experience behavioural disorganization, and the mother's and infant's attentive/affective behaviours would become desynchronized. Field et al. (1996) suggested that such desynchronization leads to failure of the infant to develop arousal modulation and organized attentive/affective behaviour. Support for this hypothesis comes from the finding that infants of depressed mothers often demonstrate a profile of such deregulated behaviours as increased fussiness, withdrawal, frequent gaze aversion, tension, rapid deterioration under stress, lowered physical activity, and reduced positive affect (Field et al., 1996). Furthermore, only postnatal and not prenatal months of maternal depression are correlated with atypical frontal lobe EEG patterns seen in infants of depressed mothers suggesting that these are environmental and not just genetic effects (Crockenberg & Leerkes, 2000).

## Language and Communication

### Theory

Beginning at birth, most children are immersed in the language and literacy of their immediate family. As infants watch and listen to their parents and siblings, speech emerges naturally. Children learn that certain cries and sounds result in particular reactions from family members, and gradually they begin to copy the speech and

language sounds of adults in an effort to communicate (Bruner, 1983). Usually at age 12-18 months children begin establishing a recognizable vocabulary that grows exponentially over the next few years. Language structures emerge as children try to communicate in a variety of contexts. Speech and language continue to develop as children experiment with it and learn how to manipulate it to achieve their goals (Courts, 1991; Ollia & Mayfield, 1991).

Within episodes of shared attention are acts of communication. Initially, communication is nonverbal and involves affect cueing such as smiles, and frowns, as well as contingent behavioural interactions such as pointing, taking and giving back, and negotiating (Greenspan, 2000). At approximately one year of age, infants begin to look where adults are looking flexibly and reliably, use adults as social reference points, and act on objects in ways they see adults act on them. Furthermore, around the same age infants also begin using intentionally communicative gestures to actively direct adult attention to outside entities. These achievements are soon followed by the acquisition of linguistic communicative skills (Carpenter, Nagell, & Tomasello, 1998).

A consistent finding in the literature on early word learning is that young children who have mothers who interact with them in a directive interpersonal style, have smaller early vocabularies than other children, especially with respect to object names (Dunham et al., 1989; Harris, Jones, Brookes, & Grant, 1986; Tomassello, Mannle, & Kruger, 1986; Tomassello & Todd 1983).

Tomasello (1988) and Tomasello and Farrar (1986), suggest that the key factor in this negative relation is joint attention. These investigators argued that, when an adult uses an unknown piece of language in an attempt to direct the young child's attention to

something new, to comprehend the communicative significance of the new language the child must shift her current attention and attempt to determine the adult's focus. On the other hand, when the adult uses an unknown piece of language in an attempt to follow into the child's current focus of attention, the child need not switch her attention at all. In this case, coordination of attention between adult and child depends on the adult's ability to discover the child's current focus of attention, which is arguably more sophisticated than the child's ability to discover the adult's focus of attention.

## Practice

Parents facilitate language development by engaging children in well established play or interactive routines where the meaning of labels or words is more obvious (Tomasello, 1988; Tomasello & Farrar, 1986). Similarly, parents use words that are simple, at the child's level or one step higher, and target objects or activities that the child is attending to. Parents should try to initiate and extend joint attentional episodes with their child as these are great opportunities to model and teach language. Finally, parents should respond contingently and with enthusiasm to child initiations and communicative attempts. Imitation is an important scaffolding strategy that extends interactive episodes, draws the child's attention to appropriate or functional aspects of language, and conveys to children that their communicative behaviour is valued.

## Evidence

Support for the importance of joint attention to the development of language was provided in two studies by Tomasello and Farr (1986). In the first study, 24 children were videotaped at 15 and 21 months of age in naturalistic interactions with their mothers. It was found, first, that both mothers and children spoke more and carried out longer

conversations inside than outside joint-engagement episodes. It was also found that mothers who followed into their child's already-established focus of attention as they spoke to them inside these joint-engagement episodes at 15 months of age had children with larger vocabularies at 21 months of age. On the other hand mothers who more often used their language in an attempt to direct their children's attention anew in these episodes had children with smaller vocabularies at 21 months (Tomasello & Farr, 1986).

In the second study by Tomasello and Farr (1986), an adult experimenter attempted to teach a novel word to 10 17-month old children in one of two ways. In the 'follow-in' condition, the adult used the new word to indicate an object on which the child's attention was already focused. In the 'direct' condition, the adult used the new word in an attempt to direct the child's attention to an object on which she was not currently focused. A subsequent comprehension test found that the children were better at comprehending the novel word if they had experienced it in the follow-in condition.

Studies by Akhtar, Dunham, and Dunham, (1991) and Dunham, Dunham, and Curwin (1993) also found that following into the child's already-established attentional focus facilitated children's word learning relative to attempting to direct the child's attention to something new. In all, it is clear that utterances that in some sense follow into the child's already-established focus of attention make the task of learning a new word more manageable for nascent language learners (Tomasello & Farr, 1986).

## Problem solving

### Theory

At around 18-20 months, a qualitative advance in symbolic representation allows for improved memory functions to form representations based on repeated events and to

use these representations to inform future behaviour (Crockenberg & Leerkes, 2000). These capacities are associated with the identification of personal goals and the ability to hold them in mind, and therefore increase goal-directed behaviour. At the same time, the emergence of self-conscious emotions, such as shame, guilt, and embarrassment and of true empathy (Emde, 1998), together with a greatly enhanced ability to comprehend and use language, allow toddlers to regulate their behaviour in the service of social goals (i.e., to develop goal-directed partnerships).

There is also a great deal of intentional guidance in fostering infant mastery (Gauvain, 2001; Heckhausen, 1987). More than 75% of observed conversations between mothers and their 2 year-olds focused on future oriented routines or events (Gauvain, 2001; Gauvain & Huard, 1998). Furthermore, mothers segment activities into manageable sub-skills. They set challenges for their infants just beyond their existing competencies. They adjust their level of assistance across phases of mastery, offering explicit guidance in earlier phases of skill acquisition but gradually withdrawing aid as infants become more competent in mastering tasks on their own. These types of instructional strategies are highly conducive to the development of a sense of personal agency and problem solving during the initial years of life (Heckhausen, 1987).

Repeated scaffolding experiences are necessary for learning each complex task, and related experiences extend the child's competence and eventually lead to an ability to take on new examples with minimal or no adult support. The skills required of the child include observation, imitation, generalization, and decontextualization but even these fundamental skills develop under the fostering support of social interactions (Meadows, 1999).

Any attempt to teach a child presents more than just moment to moment guidance. Observed over time, such activities are embedded in a deeper organization that potentially provides lived examples of planning, control, and evaluation. These include heuristic aids to learning and problem solving such as rehearsal, means-ends-analysis, sub-goal analysis, and backwards planning (Wood, 1989). "It may well be that as children become familiar and competent partners in tutorial interactions, they come to appreciate the larger structure implicit in such enterprises" (Wood, 1989, p.73).

Practice

Initially, infants and young children may have a very limited understanding of what particular tasks involve. Parents, who have a more sophisticated understanding, can offer models or successive precise and simple directions that their child merely observes and imitates. As the child is able to cope with more components of the activity and has a greater understanding of how they fit together, the parent reduces the assistance given and changes from very direct help to suggestions and encouragement. The adult takes less and less responsibility for the successful performance of the activity.

Perception of similarity of task demands is largely a personal construction, and it is not simply dictated by the number of common features. Children benefit greatly when adults draw their attention to familiar aspects of problems such as similarities between the current situation and some previously managed situation or breaking the task down into several similar elements. Given that motivation is an essential aspect of means-end behaviour, parents' scaffolding efforts will be most effective when they are contingent upon children's identified goals.

### Evidence

Early participation in planning-related discussions in the family fosters greater participation in these interactions over the years of childhood and into adolescence (Gauvain, 2001; Guavain & Huard, 1998). Furthermore, cooperative learning experiences where adult and child jointly solve problems together have been found to promote academic achievement (Gauvain, 2001; Guavain, & Huard, 1998), and increase positive peer interactions (Madden & Slavin, 1983).

## Social Skills

### Theory

Human personality and social development reflect the operation of ongoing, dynamic processes from gestation to senescence ((Crockenberg & Leerkes, 2000). Accordingly, biological and social networks converge to form identifiable stages of social development. In all stages, there is a strong, pervasive bias to form social relations. Social patterns reflect the social tools or conventions of a particular culture and are adapted and passed on through repeated social interactions. Social patterns, once organized, become increasingly resistant to change with each uninterrupted recurrence (Crockenberg & Leerkes, 2000). Early repeated positive and enjoyable social interactions with appropriate models such as parents establish productive patterns of social exchange that build social motivation and skills (Guralnick, 1983).

Children must be motivated to initiate or participate in peer and other social interactions. Children whose parents engage them in positive and contingent ways may learn to get along with peers because they anticipate that such experiences will be enjoyable. Children who enter interactions positively and enthusiastically communicate

this expectation to their play partners; they empathize with and respond contingently to their peers, allowing peers to be active in determining play activities and roles (Pettit, Harrist, Bates, & Dodge, 1991). This model, which is based on social information processing theory, is grounded in the assumption that children acquire a set of social cognitive orientations as a consequence of their repeated and familiar interactions with parents.

Success in social interactions, however, requires more than just a willingness to participate. There are many skills that are part of the broad area of social behavior (McFall, 1982). Skills such as adjusting the content of speech so that it is relevant to that of one's companion, clearly attending to the listener when speaking, moving closer to the target of one's social interactions, using attention-getting devices, and waiting until the listener is attending are all aspects of the communicative process that are predictive of successful social exchanges (Mueller & Brenner, 1977).

The execution of socially appropriate behaviours in context requires that the child has learned specific skills which they can appropriately and consistently apply, that they are motivated to positively engage others, and that they can regulate their emotions in ways that do not interfere with the learning or execution of these skills (Gresham, 1982).

## Practice

Pettit et al., (1991) stress the importance of providing a responsive environment, provides children with a sense of control in social relationships. This sense of control facilitates the development of socially appropriate interpersonal styles. Pettit et al. suggest that a great amount of intentional guidance or proactive control is required. Proactive control is characterized by careful monitoring of the child's behavior as well as

anticipatory guidance. It requires the accurate reading of child cues and acting, rather than reacting, to create an appropriate social experience for the child. There are particular scaffolding strategies that parents naturally apply that support the learning and generalization of social skills. Parents teach particular social skills through direct instruction, modeling (Parke, MacDonald, Beitel, & Bhavnagri, 1988), behavioural rehearsal, coaching, and/or scaffolding (Crockenberg & Leerkes, 2000).

A contingently responsive parenting style is particularly important for the development of social skills in that the behaviours parents demonstrate are precisely those that are related to social success. Skills such as adjusting the content of speech so that it is relevant to that of one's companion, clearly attending to the listener when speaking, moving closer to the target of one's social interactions, using attention-getting devices, and waiting until the listener is attending are all aspects of contingent responsiveness and are powerful models.

Performance of socially competent behaviours is enhanced through repeated opportunities for practice and through antecedent and consequent control techniques such as contingent social reinforcement. Children whose non-aversive behaviors have been responded to positively and contingently may be especially likely to view themselves as capable of performing socially competent behaviors, and that these kinds of cognitive appraisals would be more common among children reared by parents who are positively responsive and/or proactively involved (Pettit et al., 1991).

Repeated positive or enjoyable interactions lead the child to expect that social interactions will be rewarding, which may decrease anxiety and over-stimulation during

novel interactive experiences. Furthermore, well-developed social routines provide children with readily accessibly strategies to deal with communicative breakdowns.

Evidence

Parental responsiveness has been associated with a greater number of child-initiated verbalizations (Hemmeter & Kaiser, 1994). Additionally, children of more responsive mothers were noted to use language more and more competently (Hemmeter & Kaiser, 1994; Tomassello & Farrar, 1986). Language is an important component of social interactions, and therefore, constitutes an important social skill (Cairns, 1986).

Dekovic and Janssens (1992) observed that parents of popular children were more likely to adopt a democratic style when interacting with their children. Parents of rejected children, on the other hand, tend to endorse a restrictive style. The democratic style of parenting is characterized by the use of indirect and persuasive verbal strategies such as suggestions and explanations and by providing more support, encouragement, and positive reinforcement. Parents who apply a more democratic style seem to be more sensitive to the child's signals and more involved with their child (Dekovic & Janssens, 1992). Restrictive parents are less likely to display positive emotions in response to their child and were more likely to criticize their child's personal functioning and task behavior without providing information as to why something was wrong and how it should be done. They rely on direct commands, prohibitions, and physical take-overs, doing the task for their children rather than aiding the child to discover their own solutions (Dekovic & Janssens).

The results of a study by Martha Putallaz (1987) further support a direct relationship between parent behaviors and their child's sociometric status in that mothers

of higher status children appeared to be more positive and focused on feelings and less disagreeable and demanding when interacting with their children than mothers of lower status children (Putallaz, 1987). Her results also support a direct relationship between parental behavior and child behavior. That is, the behaviors mothers exhibited with their children were highly related to the manner in which their children acted, both with them and with an unfamiliar age-mate. Similarly, Pettit et al. (1991) found that maternal responsiveness predicted high levels of children's socially competent behavior, as rated by teachers. Furthermore, parent-child coercion predicted relatively high levels of teacher-rated aggression with peers.

Given that theory and evidence support both contingent responsiveness and scaffolding as important strategies to engage children, the next issue becomes, how can we teach parents these strategies. In the next section of this paper, one parent training approach developed at the University of Alberta, The Natural Teaching Strategies (NTS), will be discussed. This approach is operationalized through a set of teaching and parent manuals (McDonald, Kysela, Alexander, & Drummond, 1996).

## Natural Teaching Strategies

The Natural Teaching Strategies (NTS) approach is a parent training intervention geared to provide parents with attitudes, knowledge, and skills to engage their children in ways that have been hypothesized or demonstrated to facilitate more optimal child development. Interventionists also work on developing a nurturing relationship between the mother and child through guided practice and feedback. These four aspects of parenting - (a) knowledge, (b) attitudes, (c) skills, and (d) experience - constitute the

mechanisms through which parents become better at facilitating their child's development. These mechanisms operate throughout the planned intervention.

The NTS is organized around five chapters that deal with unique aspects of the parent child relationship: (1) Following your child's lead, (2) Keeping the Action Going, (3) Expansion- Adding something more, (4) Incidental Teaching, and (5) A New Look at Challenging Behaviour. The organization of the intervention approach is incremental in that knowledge and skills typically build on each other. Furthermore, the skills taught are incremental in that they are organized around the developmental process, with earlier skills more appropriate when engaging infants and later skills applied only when children are developmentally ready.

In other ways, however, the chapters combine in useful ways. For instance, the skills and abilities inherent in following your child's lead and keeping the action going constitute those skills and abilities necessary for joint engagement and contingent responsiveness. Similarly, expansion and incidental teaching, the topics in chapters 3 and 4, together, encapsulate the skills and abilities necessary for parents to scaffold children's learning. The final chapter on managing challenging behaviour is included in the manual because child misbehaviour is often a major issue identified by parents. Managing child behaviour is not specific to teaching contingent responsiveness or scaffolding strategies and will not be discussed in this paper.

## Contingent Responsiveness

The skills and abilities discussed in Chapters 1 and 2 (i.e., to follow your child's lead and keep the action going) are necessary for joint engagement and contingent responsiveness. Two primary mechanisms through which a responsive style of parenting

facilitates learning are modeling and experience. Children learn through the experience of engaging in communicative and exploratory activities with their parents. Parents act as a model and provide a comfortable environment for children to practice the skills that they observe. Parents also provide constructive non-directive feedback to their children through their actions and communication in response to their children.

Chapter 1: Following Your Child's Lead

This chapter teaches particular knowledge and skills considered preconditions for parents to take opportunities to facilitate the learning of their children. A summary of knowledge and skills taught in the first four Chapters are presented in Table 3.1.

Knowledge / Attitude. In Chapter 1, parents are taught that children learn a tremendous amount through observing and interacting with others, and parents can facilitate their child's development by engaging them in enjoyable constructive play. Furthermore, parents are taught that children learn about things that they are interested in better than things that we are interested in. Parents are taught a number of key components of good conversations. A good conversation requires that the participants speak the same language, that they speak at the same level, that they talk about something that both find interesting, and that participants share in the discussion by both taking turns.

Table 3.1

Knowledge, Attitudes, and Skills developed through the Natural Teaching Strategies

| | Follow your child's lead | Keeping the action going | Adding something more | Incidental Teaching |
|---|---|---|---|---|
| Knowledge/Attitudes | Re: child development<br>1. children learn through observation and participation<br>2. when children are motivated they learn better<br>Re: good conversations<br>1. speak same language<br>2. speak at the same level<br>3. both find interesting<br>4. both take turns<br>Re: Communication Hierarchy<br>1. eye gaze<br>2. gesture<br>3. sound<br>4. speech sound<br>5. 1 word<br>6. 2 word<br>7. phrase<br>8. sentence | Imitation<br>1. is a powerful motivator<br>2. highlights causal relationships<br>3. establishes shared attention<br>4. foundation of balanced turn taking<br>Signals communicate an expectation to the child<br>1. verbal i.e. "your turn"<br>2. non-verbal i.e. raising eyebrows, pointing, etc.<br>Prompts are physical supports for performing some action | Expansion is a form of scaffolding<br>Use previously learned routines as opportunity to add something more. | Daily routines are opportunities to teach<br>Independent performance fosters feelings of control, responsibility, and pride.<br>Modeling is a powerful teaching tool because<br>• saves time and energy<br>• gives child control<br>Good models include someone:<br>• like child<br>• who is rewarded<br>• important to child<br>• who lets child set pace |
| Skills/Abilities | Describe behaviour<br>Identify level of communication<br>Get down to child's eye level<br>Make eye contact<br>Use nonverbal cues to show interest<br>Take turns | Identify functional behaviour<br>Imitate functional behaviour<br>Match communication level<br>Keep the action going<br>Wait-Singnal-Prompt<br>• Wait for 5 seconds<br>• Signal child to take turn<br>• Prompt child to take turn | 3 steps to adding something more<br>1. Identify child's level<br>2. Wait-Singnal-Promp<br>3. Imitate child and model a better turn<br>• Be an active mirror<br>• Recruit & maintain child's attention<br>• Plan in advance<br>• Break down skill/task<br>• Keep track | Break living skills down :<br>• Environments<br>• Sub-environments<br>• Activities<br>• Skills<br>Instruction strategy<br>• *Tell* (signal)<br>• *Wait* (5 seconds)<br>• *Show* (model)<br>• *Wait* (5 seconds)<br>• *Do* (prompt) |

Skills. Skills built in 'Following Your Child's Lead' include describing behaviour, accurately identifying the child's level of (development) and communication, and determining the child's focus of attention or interest. Parents are taught a hierarchy of communication levels, e.g., eye gaze, gesture, sounds, speech sounds, and words. Parents are encouraged to observe their child and identify the highest level consistently used successfully to communicate. These skills help parents develop appropriate expectations of child ability, and nurture a positive approach.

Parents are encouraged to track times of the day and preferred activities when their child is most willing to play. During these times, parents are encouraged to get down to their child's eye level, and to communicate to the child their willingness to participate in interaction. Parents are also taught to make eye contact, to use nonverbal cues to show interest, and to take turns.

Chapter 2: Keeping the Action Going

When parents and children establish and are familiar with a series or sequence of behaviours we call those behaviours a routine. The purpose of the second chapter is to establish such routines or extend previous routines so that parents and children spend relatively more time within joint engagements than they did before.

Knowledge / Attitude. In chapter 2, parents are taught that imitation can be a powerful motivator and teaching device. Imitation acts as a sounding board for children to observe their own actions, as well as the reactions of others. Imitation provides children with experiences that nurture their developing awareness of cause and effect relationships, particularly that they are agents of change. Imitation is also an important skill for parents to master because it forms a foundation of balanced turn taking, and

shared attention. Interventionists explore with parents the value of extending the length of engagements and the number and balance of turns within engagements.

Skills. Skills built in 'Keeping the Action Going' include identifying and imitating their child's functional behaviour. Imitation, as practiced during the homework assignments and as modeled by the interventionist during home visits, provide parents with experience regarding the child's interest and communicative ability as parents are encouraged to match their child's actions with actions, sounds with sounds, and words with words.

After the parent imitates the child, children often repeat the same or a slightly different behaviour as they experiment with parental responses. When children do not repeat their behaviour or otherwise respond, parents are taught to apply a wait-signal-prompt strategy in order to extend their joint engagement. Waiting is the least intrusive signal. Parents are taught other strategies to encourage their child's turn if they do not do so on their own. These strategies involve both signals and prompts and parents are encouraged to provide as little support as necessary for their child to continue the interaction.

## Scaffolding

Expansion and incidental teaching, the topics covered in Chapters 3 and 4, together, encapsulate the skills and abilities necessary for parents to scaffold children's learning. Here, experts (parents) engage children purposefully to facilitate the acquisition of particular knowledge, skills, and abilities.

Chapter 3: Expansion- Adding Something More

Chapter 3 teaches knowledge and skills to expand on the current play situation, taking the opportunity to teach the child knowledge or skills within the comfort and structure of a previously established routine. Expansion is a form of scaffolding in that the play routine itself supports the child's success. In practiced routines, the roles of the participants are clearly established, freeing the child to focus on the expanded behaviour. Furthermore, the new behaviour that parents model should be consistent with the purpose or focus of the play routine in which it is performed. Finally, parents are taught to expand in small incremental steps so that the expanded behaviour that the child is to imitate or perform is within the child's ability and focus.

Knowledge/Attitude. In this session parents and interventionist review the previous chapters and use the review to introduce the principles of expansion. It is explained that parents can help their child add new elements into a conversation through expansion. Parents are reminded not to rush themselves or their children, that rewarding trying is more important than getting it right, and that the most important thing is that they both enjoy their interactive experiences. Parents are reminded that there are may opportunities for learning and play and that if things are not working out they leave it and resume when their child is more willing to engage. If activities are not enjoyable, then conflict will arise that will interfere with present and future learning as children begin to expect that their interactions will be tedious.

Skills. Parents are taught three steps to adding something more. The lesson is an example of expansion in that the first two steps are taught in the previous sessions with only the last step being novel.

Step 1 - Identify child's level (chapter 1)

Step 2 - Wait, signal, prompt for a turn (chapter 2)

Step 3 – Imitate your child's level and model a better turn at this level or model a turn one step higher.

Parents are taught to think of themselves as an 'active mirror', e.g., doing what the child does and then add a little bit more. In order to ensure success, parents are taught to focus their child's attention to the novel behaviour using the least intrusive signals explored in Chapter 2. Parents are encouraged to think in advance what level they will model and to target a level that the child is beginning to use successfully. Parents are taught to break down the target behaviour into manageable segments, and to identify the different skills/tasks involved in successfully performing the new behaviour. Finally, parents are taught to keep track of how things are going, assessing how successful the child was and problem solve if their child was unsuccessful, e.g., was the child attending, was the activity enjoyable, was the modeled behaviour too difficult, did the modeled behaviour make sense to the child, etc. These assessments guide new attempts to teach.

Chapter 4: Incidental Teaching

Play routines are not the only routines in which children learn. People perform many different daily living routines such as dressing and undressing, preparing and eating food, brushing teeth, and using the bathroom. Children learn these skills in incremental steps, through modeling, practice, and instruction. In this chapter, parents are taught strategies to teach these skills during times when they are occurring naturally.

When covering this chapter, interventionists discuss with parents independence skills their child needs to learn.These skills are often daily living skills such as dressing

and using the bathroom. Parents are taught to select for work developmentally appropriate skills that are grounded in the child's needs, not simply the wishes of the parent, e.g., to learn to be quiet when I am reading the paper. After several appropriate skills have been identified, interventionists help parents break the skills into smaller steps that are within the child's current abilities. Parents are also encouraged to examine when these skills occur naturally, and to set aside some time during these occurrences to practice each step.

Knowledge/Attitudes. Parents are taught that prompting means giving your child some help to succeed. Prompts can be words, gestures, or physical assistance. Parents are taught to provide just enough help for their child to be successful. Independent performance fosters feelings of control, responsibility, and pride. When children are learning a new skill, however, some instruction may be required to support success. Parents are told that modeling the behaviour the child needs to demonstrate can be very powerful. Modeling involves demonstrating the behviour you want imitated in a clear and simple manner.

Skills. Parents are taught how to break daily living skills into environments, sub environments, activities, and skills. Using dressing to go outside as an example, the environment is the home. The subenvironment might be the back door where the child's boots and jacket are stored and includes the timing of wanting to go outside. The activity is dressing, or more specifically putting on boots. The skills might include, taking the boots out of the closet, lining them up, placing them so that the big toes are next to each other, and putting feet into boots.

Children may be able to perform some but not all of these tasks independently. Some tasks may only require minimal level prompting such as pointing or signaling. When the child cannot perform a task independently with minimal support, some teaching may be required. Parents are taught the Tell - Wait - Show - Wait – Do method of instruction.

Parents are reminded that physical prompts are a last resort and that parents should use the least amount of prompting for children to perform a desired skill. Children can become dependent on prompts so parents are encouraged to fade them quickly. Parents are given examples of how to fade verbal, gestural, and physical prompts. Verbal prompts can be faded by gradually reducing the volume of your voice, by using fewer words, or by building longer delays before prompting further. Models or gestures can be faded by making them less obvious, and by building delays. Physical prompts can be faded by reducing the amount of physical assistance (i.e., move from hand over hand prompts to guiding with a light touch).

In summary, the NTS is a parent training intervention operationalized through two training and parent manuals. The manuals are comprised of five chapters. The first two chapters deal with knowledge, attitudes, and skills necessary for parents to be contingently responsive. Knowledge, attitudes, and skills necessary for parents to scaffold children's learning are covered in Chapters 3 and 4. Contingent responsiveness and scaffolding are powerful strategies to promote the development of important capacities. Table 3.2 identifies the mechanisms through which, applying the lessons taught in each of the four chapters, enhances the development of self-efficacy, emotional regulation, language, problems-solving skills, and social skills.

## Conclusion

Children are more likely to participate in joint engagements when the focus is at least in part decided by them. Furthermore, children are more likely to participate in joint engagements when their roles are clear and when their abilities are commensurate with such roles. Because young children lack language and social skills to communicate their intentions unambiguously, parents must be sensitive to children's non-linguistic behaviour. Parents who are better able to accurately interpret the communicative behaviour of their children are better able to engage them in mutually satisfying activities and to maintain or extend such interactive episodes. Parents develop a greater awareness of their child's interest, intentions, and emotions by following their child's lead.

Parents can encourage and guide children's active engagement in the constructive learning process of practice, experimentation, choice-making, and problem solving. Parents do this by responding contingently to their child's communicative acts and extending their interactions through imitation and play (Mahoney, 1988; Mahoney, Robinson, & Powell, 1992). Times of joint engagement present powerful opportunities to teach new skills.

The consequence of applying contingent responsive and scaffolding strategies effectively is that children develop critical capacities such as self-efficacy, emotional regulation, language, problem solving, and social skills, that constitute healthy child

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| Skills/Abilities | Describe behaviour<br>Identify level of communication<br>Get down to child's eye level<br>Make eye contact<br>Use nonverbal cues to show interest<br>Take turns | Identify functional behaviour<br>Imitate functional behaviour<br>Match communication level<br>Keep the action going<br>Wait-Singnal-Prompt<br>• Wait for 5 seconds<br>• Signal child to take turn<br>• Prompt child to take turn | 3 steps to adding something more<br>1. Identify child's level<br>2. Wait-Singnal-Promp<br>3. Imitate child and model a better turn<br>• Be an active mirror<br>• Recruit & maintain child's attention<br>• Plan in advance<br>• Break down skill/task<br>• Keep track | Break living skills down :<br>• Environments<br>• Sub-environments<br>• Activities<br>• Skills<br>Instruction strategy<br>• *Tell* (signal)<br>• *Wait* (5 seconds)<br>• *Show* (model)<br>• *Wait* (5 seconds)<br>• *Do* (prompt) |

development. These capacities help children control their physical and social environments in adaptive ways. Although both traumatic and positive experience throughout life are likely to influence the further development of these and other capacities, having well-developed skills early in life increase the likelihood of future positive experiences (more likely and willing to engage in positive social interactions) while simultaneously decreasing the likelihood of negative experiences (less likely or willing to engage in dangerous behaviour). Children who have well developed physical, emotional, cognitive and social skills as young children also serve as excellent models for other children and are often used as such within the educational and intervention institutions in our country.

Although it can be generally presumed that parents want what is best for their children, not all parents have the knowledge, skills, or resources to engage their children in consistently positive and nurturing ways. Teaching parenting strategies is one approach to support parents. Contingent responsiveness and scaffolding are two parenting strategies demonstrated to support healthy child development by facilitating the development of valued capacities. Consistently applying these strategies motivates children to engage in shared endeavors that are instrumental in learning the social rules and tools necessary for life. The Natural Teaching Strategies is a parent training approach intended to help parents to be contingently responsive and to scaffold children's learning.

Parent training should not be the only approach to support better parenting practices. For many families, it is a lack of emotional, financial, and time resources rather than a lack of knowledge or abilities that limits their positive involvement with their children. Regrettably for others, it is a combination of both. The promotion of healthy

child development requires that parents have the knowledge and skills to engage children in positive ways and the emotional, financial, and time resources to do so.

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# Chapter 4

## Parent Training: Can Intervention Improve Parent-Child Interactions?

# Chapter 4

## PARENT TRAINING: CAN INTERVENTION IMPROVE PARENT-CHILD INTERACTIONS?

### Introduction

Healthy child development and socio-economic status have been identified as two key determinants of health (Hamilton & Bhatti, 1996; Stewart, Reid, Mangham, 1997). Healthy child development is believed to be affected by the quality of parent-child interactions (Bandura, 1997; Sfernberg & Williams, 1995). The stresses that accompany conditions of poverty are hypothesized to negatively affect parenting behaviour (Barnard, 1997; Wakschlag & Hans, 1999). Contingent responsiveness and scaffolding are two parent engagement strategies demonstrated to facilitate healthy child development (Barnard, 1997). The Natural Teaching Strategies (NTS), a parent training intervention, helps parents acquire the attitude, knowledge, and skills to apply contingent responsiveness and scaffolding strategies while engaging with their children. This paper reports the results of a study incorporating the NTS intervention as an add on to Head Start. Twenty-nine 3-4 year old children at-risk for mental health and developmental problems due to poverty, and their parents, participated in this study.

### Poverty

Poverty is considered an important risk indicator associated with less than optimal child development. Children from impoverished families have higher rates of injuries, chronic illness, child abuse, conduct problems, school problems, intellectual deficits, hyperactivity, and emotional disorders (National Forum on Health, 1997; Sameroff,

Seifer, Barocas, Zax, & Greenspan, 1987; Seitz, 1990; Steinhauer, 1996). Later life outcomes also tend to be more negative for lower- SES children, including a greater likelihood of becoming school dropouts (US Department of Health, Education, and Welfare, 1975), an increased risk of delinquency (West & Farrington, 1973), and the likelihood of lower earnings as an adult (Waller, 1971). In Canada, approximately 21% of children live in poverty (Canadian Council on Social Development, 1998; National Council on Welfare, 1999).

There is growing recognition that risk factors typically co-occur, and that multiple risk factors are particularly hazardous because their effects are synergistic rather than simply additive. Researchers have concluded that combinations of risk factors in the child's background, rather than the presence of any particular risk factor, increase the likelihood of negative child outcomes (Bartko & Sameroff, 1995; Dunst, 1993; Dunst & Trivette, 1990; Pellegrini, 1990; Sameroff et al., 1987). Poverty is rarely present in isolation. Poverty is often accompanied by high levels of stress, social isolation, lack of personal and structural supports, low self-esteem, depression, substance use, poor nutrition, abusive or disruptive family environments, and a myriad of other personal and interpersonal risk factors (Bartko & Sameroff, 1995; Dunst, 1993; Dunst & Trivette, 1990; Garmezy, 1991). As a consequence, children living in conditions of poverty are less likely to receive the key building blocks of early development such as adequate stimulation, supervision, guided learning experiences, nutrition, decent medical care, a safe and secure environment, and access to early childhood development programs to supplement learning opportunities in the home (Manning & Baruth, 1995).

There is mounting evidence that the negative impact of economic disadvantage on children significantly derives from economic influences on the emotions and behaviours of parents or other caregivers (Conger, Rueter, & Conger, 2000; McLoyd, 1998). Parents in highly stressful situations have been observed to be less contingent in interactions, more unrealistic about expectations of behaviour, more impatient, and more prone to use physical punishment (Barnard, 1997; Wakschlag & Hans, 1999). A recent study of the interaction styles of low-income mothers (n=41) found that 66% were insufficiently contingent to support their children's optimal development (Drummond & Kysela, 1999).

## Parent-Child Interactions

Human development is considered to be an interactive process that involves progressively more complex reciprocal transactions between an active and evolving bio-psychological organism and the array of persons, symbols, and objects in her or his immediate environment (Sammeroff & Fiese, 1990, 2000). Capacities necessary to control ones environment, and achieve personal and shared goals emerge naturally as children actively observe, imitate, negotiate, and practice the routines, concepts, and skills that surround and involve them. Parents play a seminal role in the developmental process as infant's and young children's experiences with the physical and social environment typically occur in the context of the family (Bandura, 1997).

Parenting behaviour has been implicated as a primary determinant of many developmental outcomes (Cairns, 1986; Chess & Thomas, 1991, 1992; Cohn, 1990; Dekovic & Janssens, 1992; Pettit, Dodge, & Brown, 1988; Putallaz, 1987; Scaffer, 1992). Consequently, there has been considerable effort to empirically investigate what particular aspects of parent's knowledge, attitudes, and skills, associated with particular

parental behaviour lead to positive child outcomes. Once identified, it becomes important to then develop and test strategies that will nurture such knowledge, attitudes, and skills.

## Parenting Strategies

Parents function to guide, encourage, and support children's naturally developing initiative to control their physical and social environments in socially acceptable ways (Bandura, 1997). Parents provide a structure through which children experience the world. Through the provision of routines, both functional (feeding, dressing) and play, children anticipate and therefore act more meaningfully on their environments. Parents go about controlling their environments in full view of children revealing causal and controllable relationships. Parents directly teach specific behaviours and skills and provide feedback regarding children's performance. Finally, parents engage children in joint activities that require and enhance communication (Greenspan, 2000; Carpenter, Nagell, & Tomasello, 1998), problem-solving (Crockenberg & Leerkes, 2000), emotional regulation (Field, Healy, Goldstein, & Guthertz, 1996), social skills (Crockenberg & Leerkes, 2000; Guralnick, 1983), and motivation or self-efficacy (Bandura, 1997)

When adult and child interact in such a way that there is a sharing of focus, purpose, roles, and/or emotions, they are said to be jointly engaged (Tomasello & Farrar, 1986). Episodes of joint engagement are powerful learning opportunities because there is a coupling of novice and skilled interactants. Parents, therefore, must both motivate their child to participate in shared endeavours as well as use these episodes to teach new knowledge, skills, and abilities. Contingently responding to child behaviours, interests, and emotions is an important strategy to initiate and maintain joint engagements

(Bandura, 1997), and scaffolding is an important strategy within joint engagements to facilitate and extend learning (Bruner, 1983).

Contingent responses are behaviours that are consistent with the child's already existing focus of attention, emotional state, ability, and interest. Adult interactions characterized by high responsiveness and low directiveness, appear to be effective in fostering children's development because they encourage children's active engagement in the constructive learning process of practice, experimentation, choice-making, and problem-solving (Mahoney, 1988; Mahoney, Robinson, & Powell, 1992). Contingent responsiveness is essential for good parent-child transactions (Bandura, 1997). Good parent- child transactions require participants to communicate at the same level, focus on something that both find interesting, and take turns. Children's limited cognitive, social, and emotional abilities require parents to adapt their behaviours to meet these objectives. Parents must adapt their behaviour to the interest and communicative level of the child in a way that interests the child and maintains balanced turn taking. When parents are accurate in their judgments regarding the intentions, interests, and emotions of their children, parents can more effectively teach new knowledge, skills, and abilities.

Scaffolds are strategies that parents use while engaging children that build on what the child already knows and extends this knowledge (Bruner, 1983; Vygotsky, 1994). Scaffolding involves activities such as: interesting the child in the task, reducing the number of steps required to solve a problem, maintaining the pursuit of the goal, marking crucial features or discrepancies between what the child has produced and the ideal solution, controlling frustration and risk in problem-solving, and demonstrating an idealized version of the act to be performed. Scaffolding has been characterized as acting

on the motto of "Where before there was a spectator, let there now be a participant" (Bruner, 1983, p.60). Over time, caregivers systematically shape joint experiences in such a way that the child will take greater and greater responsibility for shared endeavours.

## Intervention Approaches

Given the enormous personal and social costs associated with children growing up in impoverished conditions, a number of approaches have been developed and implemented that target at-risk children and their families. Interventions target the child, the family, or both. Interventions that target the child are usually in the form of centre-based preschool programs. Family-based interventions typically work with parents to either provide parents with the knowledge attitudes, skills, and resources to engage their children in ways that have been demonstrated to enhance healthy development, or to access personal and professional resources to improve family functioning. Child-based and family-based intervention programs have demonstrated important benefits to both parents and children (Barnett, 1995; McKey et al., 1985; Olds & Kitzman, 1990; Olds et al., 1998; Ramey & Ramey, 1985; Royce, Darlington, & Murray, 1983; St. Pierre & Layzer, 1996). Generally, reviews of research show that early intervention programs are more effective if they involve parents (Brofenbrenner, 1979; Seitz, 1990), and that they have a positive effect on parent-child interactions (Benasich, Brooks-Gunn, & Clewell, 1992). Child-based and family-based interventions are dual mechanisms through which preschool interventions affect child outcomes. It is argued that effectiveness is enhanced when these intervention approaches are combined to target both children and their families (Guralnick, 1993; Reynolds, Mavrogenes, Bezruczko, & Hagemann, 1996; Yoshikawa, 1994).

## Natural Teaching Strategies

One parent training intervention, the Natural Teaching Strategies (NTS) (McDonald, Kysela, Alexander, & Drummond, 1996), was specifically developed to teach contingent responsiveness and scaffolding strategies in. The skills taught in NTS are 'natural' in the sense that most parents have used the techniques at one time or another without prompting in their everyday activities. The NTS includes five chapters that deal with unique aspects of the parent child relationship: (a) Following your Child's Lead, (b) Keeping the Action Going, (c) Expansion- Adding Something More, (d) Incidental Teaching, and (e) A New Look at Challenging Behaviour. The organization of the intervention approach is incremental in that knowledge and skills typically build on each other. Further, the skills taught are incremental in that they are organized around a building process, with earlier skills more fundamental and later skills building on the foundations.

The chapters also combine in useful ways consistent with the objectives of teaching contingent responsiveness and scaffolding strategies. The skills and abilities inherent in following your child's lead and keeping the action going constitute those skills and abilities necessary to be contingently responsive. Expansion and incidental teaching encapsulate the skills and abilities necessary for parents to scaffold children's learning. The final chapter on managing challenging behaviour is included in the intervention because child misbehaviour is often a major issue identified by parents.

A pretest - postest experimental design was conducted in the present study to examine the effects of this intervention over and above the effects of Head Start early intervention on parent and child behaviours during videotaped play interactions.

## Method

The purpose of this research was to test the effects of the NTS parent training intervention on parent and child interactive behaviours (Letourneau et al., 2001). It was hypothesized that after intervention, the intervention group parents would be more contingently responsive with their children. It was therefore hypothesized that intervention parents would: be more responsive in interactions, initiate parent-child interactions less, and have fewer non-engaged behaviours in interactions than parents in the comparison group. It was also hypothesized that parents would apply scaffolding strategies while engaging with their children. Although no direct measure of scaffolding behaviours were measured in this study, parents were taught how to expand on interactive routines. Consequently, it was hypothesized that parent-child engagements would be extended, and this would be reflected in longer turn taking sequences. Finally, parents were encouraged to have fun and to make the interactions enjoyable. It was, therefore, hypothesized that parents would provide more praise in interactions. Given the contingent nature of interactions, child behaviour was also expected to change. These changes would be reflected in: a greater proportion of child initiated parent-child interactions, and fewer responses and non-engaged behaviours.

### Participants

The original sample consisted of 34 families of 3-4 year old at-risk children enrolled in Head Start. This study was conducted within a larger Child and Family Resiliency Project (Drummond, Kysela, McDonald, Alexander, & Fleming, 1997). Participation numbers fluctuated due to family moves and changes in family circumstances. Thirty-four families participated in the baseline period and 29 families

participated at the 6-month posttest. Only families with complete data (n=29) are presented here. All families received a $100 honorarium for participating in the research and had access to free weekly childcare. Written consent to participate was obtained before random assignment to either the intervention or comparison group.

Participants that received the NTS intervention during the first 6 months of the larger study (n=9) and the comparison group (n=20) are included in the present report. The design of the larger study was a dual treatment crossover design. In this design individuals are randomly assigned to either treatment or control groups. Individuals within the intervention group are further randomly assigned to either treatment 1 or treatment 2 during the first intervention period and then receive the other intervention during the second intervention period. A power analysis was conducted prior to the study and it was established that the crossover design could be conducted with as few as 10 cases in either of the treatment groups as their effects would be pooled in comparison to the control group. This is the explanation of the large difference in sample size between the intervention and control groups. Analysis on pooled data was not conducted in the present study because assumptions prerequisite to pooling were not attained.

All participating families had a preschool child enrolled in Head Start in a large western Canadian city. To qualify for inclusion in the study, children had to demonstrate a 6-month or more delay in two or more developmental areas (cognitive, social, and/or behavioural). As well, the families had two or more of the following risk factors: education less than grade 10, family income less than $20, 000, divorced or lone parent, and unemployed.

## Design

A pretest-posttest experimental design was used. Intervention families received Head Start and the NTS intervention, and comparison families received only Head Start. The Head Start program had three primary components, a school readiness program, weekly parent group meetings, and monthly home visitation by Head Start outreach workers (Webster-Stratton, 1998; M. Craig, personal communication, June 22, 2000). The parent groups and outreach workers provided families with information, and emotional support.

## Interventionists

Interventionists were Master's students in Educational Psychology with a Special Education focus. Before the intervention began, the students were trained to implement NTS over 15 days of instruction and coaching. A family-centred approach was used throughout training and implementation to maximize interventionists' sensitivity to families' strengths, individuality, and ethnicity (Dunst & Deal, 1994; Shelton, Jeppson, & Johnson, 1987). Ongoing debriefing sessions among the investigators and interventionists were held every 2 weeks for the duration of the study to monitor the integrity of the intervention and to problem-solve challenging family situations. As well, interventionists were required to make field notes following home visits about family responsiveness to intervention, families' questions, and any issues or problems for discussion at debriefing sessions.

## Interventionist's Protocol

Parents and interventionists devoted two home visit sessions to each topic. Visits were conducted on a bi-weekly basis. Parents were provided with a NTS manual that

closely resembled the interventionists' manuals, but without the instructions for the interventionists. Parents and interventionists worked through the material during each session. Parents were asked to complete very small "homework" assignments that documented parents' application of the program content to their everyday interactions with their preschoolers. This provided a context for subsequent sessions.

## Data collectors

Three data collectors were graduate students in the Department's of Educational Psychology, and Nursing, at the University of Alberta. Data collectors were blind to the assignment of participants to groups. Prior to meeting with families, the data collectors received instruction on videotaping interactions in the home. Each data collector was trained in conducting the data collection procedure, as well as on proper use and maintenance of the video cameras. The data collectors met weekly with the investigators to discuss progress, issues, and problems.

A research team that included the three data collectors plus four graduate students that were trained solely as coders conducted the scoring, entering, and analyzing of data. Training for the coding of instruments was conducted over the month prior to data collection, or when new coders were hired. Depending on the coder,15 to 20 hours of training were required for the coders to code reliably and consistently.

## Data Collection Protocol

Families were randomly assigned to one of three data collectors. Data collectors made appointments at the families' convenience. During the first visit, demographic information was collected and the purpose of the session was explained. Data collectors then set up the video camera. When the camera was set up parents and children were told:

"On this visit we would like to get about 15 minutes of tape of the two of you playing with some toys that I brought from the project toy library." After 15 minutes of consecutive videotaped play, the data collectors stopped the recording and informed the family that recording had stopped. When they had finished, the family was thanked for participating, and the next visit was arranged if necessary. Videotape data was collected at the baseline pretest and 6-month posttest.

## Instruments

### Interactive Language Assessment Device

The Interactive Language Assessment Device (ILAD)(Fleming, 1995; Hemmeter & Kaiser, 1994, personal communication, July 1995) is a continuous behavioural observation coding system. From each videotaped play session, one randomly selected 3-minute section was analysed using the ILAD coding system. Across nine 3-minute segments, the average number of both parent and child behaviours was 54. Fifty-four behaviours were considered to provide a reasonable variety and quantity of parent and child behaviours for analysis.

The coding system involves continuous-observations in which each parent and child behaviour is coded from videotape. Behaviours are coded into three primary types: (a) initiations, (b) responses, and (c) non-engaged behaviours for both parents and children. Initiation is coded when one participant attempts to communicate (verbally or non-verbally) with the other participant. Criteria for this code include a) that the participants were previously unengaged, b) the intention of the person behaving is judged to be an attempt to recruit the other's attention or focus to some activity or object, and c) there is both the expectation and the opportunity for the other participant to respond.

Examples of initiations include giving instructions, asking questions, and recruiting the other's attention. The frequency of initiations was summed across all initiation behaviour types.

Responses are coded when a behaviour of either the parent or the child follows naturally in relation to both time and focus from a previous initiation of the other participant. Examples of responses include correct responses, incorrect responses, repeating, mirroring, and following the other's lead. The frequency of responses was summed across all response behaviour types.

Non-engaged behaviours involve comments or actions that are clearly unrelated to the actions or focus of attention of the other participant. Non-engaged behaviours included unrelated comments, failing to respond, and verbal and non-verbal indicators of disinterest or disengagement. The frequency of non-engaged behaviours was summed across all non-engaged behaviour types.

For the purpose of analysis, proportions were calculated from frequencies of adult or child behaviours and all results are based on percentages of either adult or child behaviours unless otherwise specified. The only exception to this involved praise behaviours. Because the quantity of praise was of interest, frequencies of praise behaviours were analyzed.

Although no objective measure of the affective quality of interactions was used, A subcategory of parental response behaviours (praise) may provide some indication of the amount of positive regard or positive reinforcement demonstrated by the parents. For this reason, the frequency of praise behaviours, a subtype of response behaviours was

examined separately. Praise is not reported as a proportion of behaviour, rather the frequency of praises was used in the analysis.

Reliability was established prior to coding the data. Coding of study data did not begin until the coders received a minimum of 80% agreement on three successive 30-second segments on three different videotapes. A comparison of the coded data sheets was made on a point-by-point basis. Reliability was reassessed approximately every four days. Ongoing reliability was relatively consistent (M = 82.6%) across 31, 30-second observations (a partial sample of over half the observations).

Turn Taking Coding System

The Turn Taking Instrument (Kunasegaran & Fleming, 1995) is also a time sampling, continuous observation system where the behaviours of the parent and child are coded from the video of the play session. It was developed in order to evaluate the number and duration of engagements, and the number of reciprocal turns within engagements. An engagement is a sequence of socially related behaviours between two participants. An engagement is made up of a turn taking sequence that is initiated by one participant and is responded to, at least once, by the other participant. Engagements end when the sequence is interrupted either by an outside force, e.g., the phone rings, or by one of the participants disengaging from the other person or activity. This interruption is coded as a termination.

A turn is coded as a sequence of two behaviours. A turn is coded when one participant responds to a behaviour of the other participant. The turn taking sequence length is determined by totaling the number of turns chained together without interruption. As an example, a 5-turn sequence may be as follows:

| | | |
|---|---|---|
| | Parent initiation ----------> child response | (1 turn) |
| (2 turns) | parent response ----------> child response | (3 turns) |
| (4 turns) | parent response ----------> child response | (5 turns) |

The average number of turns within engagements is a measure of the dyads ability to sustain their interactions. Given that the measure of average number of turns within an engagement can be artificially inflated by one or two significantly long episodes, a measure of the percent of engagements longer than 10 turns reflects the consistency of longer engagements. Although the determination of 10 turns is somewhat arbitrary, episodes of 10 turns tended to require considerable focus and reciprocity on the part of the participants.

Coefficients of agreements were used to calculate the inter-rater reliability for the turn taking instrument. Twenty, 3-minute episodes were used in calculating reliability, which is approximately 24% of the entire number of episodes coded. In general, the turn taking instrument demonstrated good reliability for measuring engagements (96%), total turns (93%), and turns within engagements (89%).

## Analysis

Given the exploratory nature and clinical relevance of this study a very liberal standard of significance was set. Even slight differences between groups were of interest to the researchers as findings were to inform future development of both the intervention and the assessment tools. Three levels of analysis were used. First, all hypotheses were tested using (2-group) * (2-time) repeated measures analysis of variance for unequal n's. Second, when no significant repeated measures interactions were found, independent

samples t-tests were used to compare the means of the two groups at one time, and repeated measures samples t-tests compared each group between baseline and 6-month posttest. As all of the hypotheses are directional, one-tailed t-tests were used. Third, treatment effect sizes were calculated. The standard deviation of the comparison group was used to determine the effect of intervention.

## Results

### Demographic Information

Of the adult participants, all were considered the primary caregiver, and all were female. Twenty-five were mothers, two were the child's grandmother, and two did not specify their relationship to the child. The primary caregivers had a mean age of 29 years (range = 21 to 52 years). There were 10 married partnerships, five common-law relationships, and 10 families were headed by either a divorced, separated, or single person. Four families had no report on partnership status. Gross family income was generally below the poverty line: 23 families reported a gross income less than $20,000, and two families considered their income to be under $30,000. (Four families did not report their gross family income). Ethnicity data were not collected; however, six families reported using English as a second language. Fifteen of the respondents reported less than a high school education, 11 had completed high school, and one identified some college training. The mean age of the children in the study at baseline was 50 months (SD = 4.6). Twenty-one girls and eight boys were included in the final analysis.

Intervention and comparison groups did not differ significantly on any of the demographic or descriptive characteristics at baseline, including education level, income, partner status, English as a second language, children's cognitive functioning as

measured by the gross cognitive index of the McCarthy Scales of Children's Abilities (MSCA) (McCarthy, 1972), or family functioning as measure by the Family Assessment Measure (FAM III) (Skinner, Steinhauer, & Santa Barbara, 1984). T-test comparisons were equal variances are not assumed are reported in Table 4.1 along with means and standard deviations. Cross tabulations of demographic information between the intervention and control groups are presented in Table 4.2. Families with boys had a higher rate of attrition (27.3%) than families with girls (12.5%). Otherwise, no meaningful differences were noted between families who completed the study and those that did not.

Table: 4.1
Group Comparisons on Baseline Demographic Information Between NTS and Control

| | | N | Mean | (SD) | t-value |
|---|---|---|---|---|---|
| Age of Male in Home | Control | 19 | 22.9 | (15.3) | .381 |
| | NTS | 8 | 20.2 | (16.9) | |
| Age of Female in Home | Control | 18 | 29.9 | (9.5) | .798 |
| | NTS | 8 | 27.7 | (4.2) | |
| Gross Family Income | Control | 17 | 18,000 | (600) | .604 |
| | NTS | 8 | 17,000 | (400) | |
| Family Functioning | Control | 18 | 51.0 | (14.2) | -1.12 |
| | NTS | 9 | 55.2 | (5.6) | |
| McCarthy Scale of children's abilities | Control | 19 | 87.6 | (18.9) | -.738 |
| | NTS | 9 | 91.6 | (9.3) | |

Table 4.2

Group Comparisons Between NTS and Control

| | NTS | Control | DF (N) | Chi-Square |
|---|---|---|---|---|
| Child Gender | | | | |
| Male | 7 (35%) | 1 (11.1%) | 1 | 1.77 |
| Female | 13 (65%) | 8 (88.9%) | | |
| Primary Care Giver | | | | |
| Mother | 16 (84.2%) | 8 (100%) | 1 | 1.42 |
| Grandmother | 2 (10.5%) | | | |
| Other | 1 (5.3%) | | | |
| ESL | | | | |
| No | 16 (80%) | 8 (88.9%) | 1 | .344 |
| Yes | 4 (20%) | 1 (11.1%) | | |
| Level of Education | | | | |
| Less than 7 years | 1 (5.3%) | | 4 | 2.04 |
| Junior High | 4 (21.1%) | 1 (12.5%) | | |
| Some Senior High | 5 (26.3%) | 4 (44.4%) | | |
| High School | 8 (42.1%) | 3 (37.5%) | | |
| Some Collage | 1 (5.3%) | | | |
| Marital Status | | | | |
| Married | 6 (35.3%) | 4 (50%) | 4 | 4.78 |
| Separated | 1 (5.9%) | | | |
| Divorced | 1 (5.9%) | | | |
| Single | 4 (23.5%) | 4 (50%) | | |
| Common Law | 5 (29.4%) | | | |

## Parent Behaviour

Means and standard deviations for the proportion of parent behaviour types in interaction with their child are presented in Table 4.3. Although the interaction for the repeated measures was not significant, parents in the intervention group performed significantly fewer initiations than the comparison group at 6-months ($t=2.56$, $p=.008$). In

other words, parents in the intervention group took the lead less in their interactions with their children as a consequence of this intervention. The effect size for the intervention group was 1.09, suggesting that individuals in the NTS group had a mean change score greater than one standard deviation.

Table: 4.3

Proportion of Adult Behaviors in Interaction with their Child

| | Group | Baseline | | | 6-months | | |
|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD |
| Adult Initiations | Control | 21 | 46.8 | (15.1) | 21 | 45.1 | (11.3) |
| | NTS | 11 | 45.7 | (11.9) | 9 | 31.9 | (14.4) |
| Adult Responses | Control | 21 | 33.5 | (14.2) | 21 | 40.7 | (11.5) |
| | NTS | 11 | 34.1 | (13.2) | 9 | 59.5 | (18.7) |
| Non-Engaged Behavior | Control | 21 | 19.7 | (6.9) | 21 | 14.2 | (7.9) |
| | NTS | 11 | 20.2 | (10.5) | 9 | 8.7 | (6.8) |

A significant time by treatment interaction ($F=4.5$, $p=.022$) was observed in parent responses. Further, parents in the intervention group made significantly more responses than the comparison group ($t= -2.64$, $p=.018$, unequal variances). In short, intervention parents responded more to their children at 6-months than the control group parents. The effect size for the NTS group was 1.83, suggesting that individuals in the intervention group had a mean change score of almost two standard deviations.

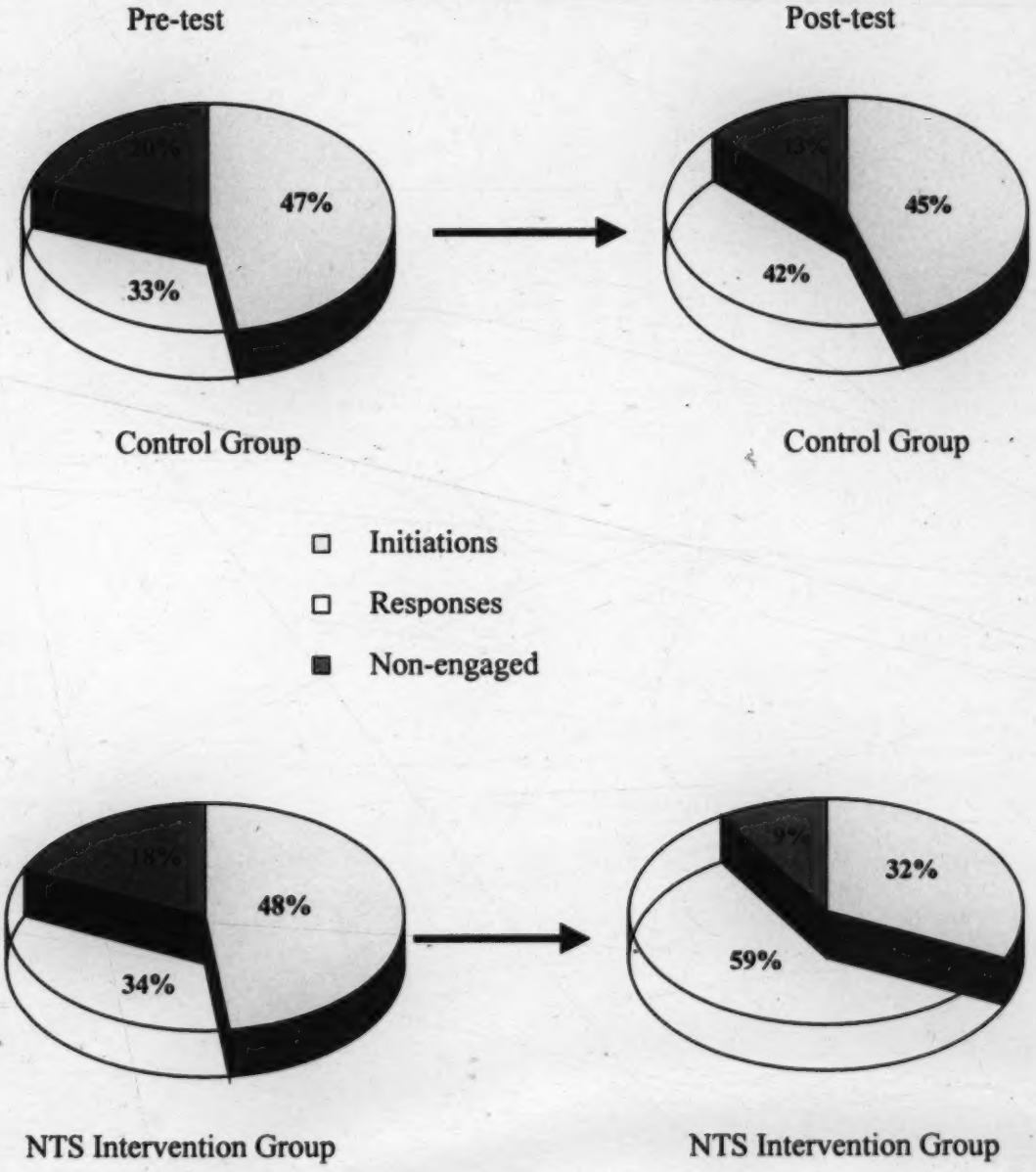
While there were no significant differences between groups with respect to non-engaged behaviours, there was significantly more variability in the proportion of adult non-engaged behaviours in the intervention group than in the comparison group. The effect size for the NTS group was 1.3 suggesting that the parents in the intervention group had a mean change score of more than one standard deviation.

Profiles of parent behaviour during interaction for each group at pretest and posttest are provided in Figure 4.1. Given that previous results were conducted on percentages of adult behaviours the charts incorporate information from all three behavioural types (i.e., initiations, responses, and non-engaged behaviours). Further, together, they paint a fuller picture of the profile of behaviour change occurring over time. Of particular interest in examining these profiles are the very similar profiles between the treatment and comparison groups at baseline. Also, the profiles of adult behaviours were very similar for the control group at baseline and 6-months. This finding suggests that parenting behaviour did not seem to change very much for the control group. The profile of adult behaviours was very different for the intervention group at 6-months than either the intervention group at pretest or the control group at either pretest or posttest. These findings suggest that parenting behaviour was changed as a consequence of the intervention.

The frequency of praise behaviour was used as an indicator of parent's attempts to making the interactions more positive. These behaviours occurred very infrequently within a three-minute session and the variances between the two groups were not equal at baseline. Consequently, Mann-Whitney U non-parametric statistics were conducted. Three comparisons were conducted (a) comparing the distribution of praise behaviours between the treatment group and control group at baseline, (b) comparing the distribution of praise behaviours between the treatment group and control group at 6-months, and (c) comparing the distribution of change in the frequency of praises between baseline and 6-months between the treatment group and control group. Consistent with other analyses a liberal level of significance ($p<.1$) was used. The distribution in the frequency of praise

Figure 4.1

Profile of parental behaviour change



behaviours were not significantly different between the two groups at baseline. Parents in the treatment group praised more frequently than the control group at 6-months ($p<.074$). More importantly, increases in the frequency of parental praise behaviours between baseline and 6-months occurred significantly more often in the treatment group than in the control group ($p<.047$). This finding supports the hypothesis that parents would praise more often as a consequence of the intervention.

## Child Behaviour

Means and standard deviations of child behaviours in interaction with their parent are presented in Table 4.4. No meaningful differences existed between children in the control group or NTS group on measures of child behaviors. This finding was true at both baseline and 6-months. All children, however, demonstrated more initiating behaviors ($F=18.6$, $p<.001$) and fewer non-engaged behaviors at 6-months ($F=3.5$, $p.<.1$) than at baseline.

Table: 4.4

Proportion of Child Behaviors in Interaction with their Parent

| | Group | Baseline | | | 6-months | | |
|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD |
| Child Initiations | Control | 20 | 11.0 | (7.3) | 20 | 20.5 | (6) |
| | NTS | 9 | 10.8 | (8.5) | 9 | 24.5 | (12) |
| Child Responses | Control | 20 | 45.1 | (13.1) | 20 | 43.1 | (11.6) |
| | NTS | 9 | 47.1 | (22.6) | 9 | 38.7 | (14.3) |
| Non-Engaged Behavior | Control | 20 | 43.9 | (13.1) | 20 | 36.5 | (12.7) |
| | NTS | 9 | 42.1 | (21.1) | 9 | 36.8 | (12.4) |

## Turn Taking

Means and standard deviations for turn taking behaviours are presented in Table 4.5. No significant interaction effect or main effect for time was demonstrated for the average number of turns within engagements between baseline and 6-months. Further, neither group demonstrated significant differences in the average number of turns within engagements between baseline and 6-months. However, although the control group made significantly more turns per engagement than the treatment group at baseline ($F=3.75$, $p<.06$), this difference was not significant at 6-months.

Table 4.5

Profile of Turn taking Behavior in Interaction

| | Group | Baseline | | | 6-months | | |
|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD |
| Average # of turns within an engagement | Control | 20 | 28 | (20.2) | 20 | 23.7 | (22.9) |
| | NTS | 8 | 13.9 | (4.5) | 8 | 24.9 | (23.1) |
| % of engagements with More than 10 turns | Control | 20 | 68.4 | (33.9) | 20 | 57.0 | (32.6) |
| | NTS | 8 | 40.4 | (24.2) | 8 | 62.0 | (24.9) |

A significant repeated measures interaction effect ($F=3.95$, $p<.075$), but no main effect for time was demonstrated for the percent of engagements longer than 10 turns. Although there were no significant paired samples t-tests demonstrated for either group, the intervention group demonstrated a change score effect size of .64, almost two thirds of a standard deviation increase from baseline to 6-months. Further, although the NTS group had fewer engagements with 10 or more turns than the control group at baseline ($F=4.5$, $p<.05$), there was no significant difference between the two groups at 6-months.

## Discussion

A key limitation of this study pertains to the small sample sizes. Convergence of findings on significance testing lends some credibility to the data; however, results should be interpreted with caution. Similarly, running parametric assessments on small samples with unequal numbers of subjects, obscure possible instability in the smaller group variances.

The profile of results presented in Figure 4.1, suggests that the intervention was effective in changing parents' behaviour while interacting with their children. A profile of more responses and less initiations is consistent with the objectives taught in Chapter 1, Following your Child's Lead and Chapter 2, Keeping the Action Going. Further, the fact that parents were less non-engaged after intervention suggests that fewer behaviours were off task and unrelated to joint activities. This profile is consistent with being more contingently responsive (Bandura, 1997). An increase in the average number of turns per engagement and the number of engagements with 10 or more turns suggests that parents were extending interactions with their children. Extending interactions was taught in Chapter 3 and is considered an important scaffolding strategy (Bandura, 1997). Greater frequency of praise behaviours also suggests that the interactions were more positive, although the affective quality of the interactions was not directly assessed.

Together, the results, although not conclusive, are consistent with the conclusion that parents were applying the knowledge and skills taught in the NTS intervention. It will be important for future research to examine if test if these changes are maintained over a long period of time.

The findings of this study, although limited by the small sample size, are important because they demonstrate the potential of parent training to alter the style of interactions between parents and their children. These findings are consistent with a recent review of parent-focused home base programs (Brooks-Gunn, Berlin, & Fuligni, 2000). In their review 12 of 15 parent-focused home-based programs demonstrated at least some befit to parent/child interactions. It should be noted, however, that all targeted participants were parents with infants and not preschool aged children. By the time children are 3 years of age, parents and children have had repeated experiences interacting, possibly consolidating a style of interaction that is more resistant to change. Finding parent training intervention studies that target at-risk parents of preschool aged children, and that incorporate comparable behavioural observation tools has proven difficult. However, such comparisons are required to both test the hypothesis that affecting change in styles of interaction become increasingly difficult and generally to determine if the results found in this study are greater or less than would be expected.

Children in both the treatment group and the control group demonstrated proportionally more initiating and fewer non-engaging behaviours at 6-months. Although it is impossible to determine in the present study, there are three possible explanations that could account for such findings. First, it is possible although unlikely (n=29), that this was just a chance finding. Second, it is also possible, that these changes are developmental and are consistent with behavioural changes of other 3-to-4-year-old children. Third, since all the children participating in the present study participated in Head Start, changes may be a consequence of the Head Start intervention. Further research is necessary to examine these possibilities.

No treatment effects were observed in the behaviour of children participating in this study. Given that interaction is, by necessity, bi-directional, sustained changes in parents' behaviour would likely produce changes in children's behaviour in interactions with their parents. Although it is hypothesized that parental behavioural changes, if maintained, would lead to enhanced development of language, problem-solving, and social skills, these assumptions need to be tested.

One significant contribution of the present study was the development of two preschool-parent interaction behavioural coding systems. The ILAD and the Turn Taking coding system were developed to measure aspects of parent-child interactions that were hypothesized to change as a consequence of parents applying contingent responsiveness and scaffolding strategies. Significant behavioural and engagement profile changes in the hypothesized direction support the claim that the coding systems were in fact sensitive to aspects of parenting that were targeted.

This study emphasized improvement of the parent-child relationship via parent training. The interventionist training, parent training intervention, and outcomes were well documented. However particular adaptations to unique family profiles were not systematically documented. Documentation of particular adaptations may improve the intervention delivery in the current trial, future trials, or in practice (Morse, Penrod, & Hupcey, 2000; Gottlieb, 2000).

The intervention was delivered by interventionists with advanced educational preparation. The feasibility of implementing the interventions with alternative interventionists should be examined. For example, the effects of using experienced peers versus professionals or peers in collaboration with professionals could be tested.

Research is also required to examine alternate routes of parent training. Possible examples include parent groups, individual family sessions in clinical settings, or as an add on to other family support initiatives where the teaching objectives are not the only purpose of contact e.g., family support workers addressing many issues of family functioning and where parenting skills are modelled and discussed only when the need or opportunity arises. Within these various approaches, issues regarding staff training and ability need to be examined and comprehensive program evaluations are required to examine issues of efficiency and effectiveness. Finally, all parents involved in the intervention study were considered at risk. Characteristics of families affect intervention outcomes, examining the interactions between family characteristics and treatment operations and outcomes are essential.

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# Chapter 5

## CONCLUSION

Physicians, biochemists, and the general public often assume that the body is a machine that can be protected mainly by physical and chemical intervention. This approach, rooted in 17th century science, has led to widespread indifference to the influences of primary determinants of human health such as environment and personal behavior, and emphasizes the role of medical treatment (McKeown, 1976). Today there is general agreement that there are social, economic, and cultural determinants of health, just as there are genetic and biological determinants (McCain & Mustard, 1999). These transformed attitudes have led to the development of a new approach to health, the population health approach (Health Canada, 1999). "The population health approach explores the ways in which health is determined by the interaction of individual characteristics and endowments, the physical environment, and social and economic factors" (Health Canada, 1999, p.6).

Twelve key determinants of health are identified within the population health approach. Income and social status, social support networks, education, physical environments, health services, employment and working conditions, gender, culture, biology and genetic endowment, personal health practices, individual capacity and coping skills, and healthy child development are all considered key determinants of health (Health Canada, 1999).

The complexity of factors affecting health and wellness are not captured by linear causal models. Models that allow for bi-directional and synergistic effects over time are required. The population health approach endorsed by the federal and provincial ministers of health espouses a multilevel ecological strategy to examine the complex interplay of factors that affect health (Health Canada, 1999). Such a comprehensive model allows for collaboration and interdisciplinary dialogue.

Health is defined broadly as a resource for daily living and includes physical capacities, personal resources, and social resources. Further, the population health approach is inherently developmental, considering current and future health as the consequence of one's individual pathway through life. Although experiences throughout life can alter one's trajectory and hence affect present and future health, some emerging evidence suggests that an individual's earliest experiences, during the first few years of life, are perhaps the most formative (McCain & Mustard, 1999).

Evidence supporting the importance of early child development is based primarily on studies of human neurophysiology. During the first 3-4 years of life there is a tremendous amount of experience-dependent brain development, i.e., formation of cell assemblies, neural differentiation, and neural pruning (Gottlieb, 1983; Gottlieb, Wahsten, & Lickliter, 1995; Hebb & Donderi, 1987). It is precisely because early experiences may have important latent effects on development and health that healthy child development is considered a key determinant of health. Enhancing healthy child development, therefore, constitutes a powerful approach to enhance the health of individuals throughout their lives.

## Healthy Child Development

The purpose of this dissertation was to examine ways to promote healthy child development. This dissertation was a paper-based thesis comprised of three discrete papers, each of which addressed slightly different issues related to promoting healthy child development.

### Exploring the Determinants of Healthy Child Development

Chapter 2 addressed issues regarding determinants and outcomes of healthy child development. The purpose was to provide a framework to examine policies, programs, and practices to support healthy child development. First, crucial capacities that characterize healthy child development were examined. Humans are thinking, feeling, and acting social organisms. Consequently, healthy child development is characterized by well developed and integrated motor, cognitive, social, and emotional capacities. A list of individual capacities necessary for healthy human development and functioning was completed.

A second purpose of Chapter 2 was to identify features of children's physical and social environments presumed to affect their development of these important capacities. Characteristics of children and their physical and social environments associated with healthy child development and later life outcomes were identified and situated within an ecological model. This model organized factors that affect individual development at different levels of social aggregation.

Characteristics of children and their environments associated with negative health and developmental outcomes were considered risk factors. Characteristics of children's environments associated with positive health and developmental outcomes, especially

under conditions of risk, were identified as protective factors. Evidence supports the observation that it is the combination of risk and protective factors, rather than any particular factor alone that is most predictive of developmental and life outcomes (Bartko & Sameroff, 1995; Dunst, 1993; Dunst & Trivette, 1990; Pellegrini, 1990; Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987). Poverty was used in this paper as an example to highlight the consequences of multiple risk factors operating synergistically, and as a way to target individuals most at risk for negative developmental and health outcomes.

Examining intervention strategies to improve the development of children living in conditions of poverty constituted a third purpose of Chapter 2. Given that early child development typically takes place within the context of the family, supporting parents to provide enriching interactive experiences was considered an essential way to promote healthy child development. Intervention approaches that provide direct service to children and their families living in conditions of poverty were explored. Three intervention approaches were identified: (a) child based, (b) family based, including parent-focused and family-focused, and (c) two-generation approaches. These approaches were examined on the basis of who they target, i.e., the child, the family, or both, and the mechanisms through which they were presumed to operate, i.e., the enhancement of protective factors, or the elimination of risk factors.

Child and family based approaches have demonstrated positive although limited effectiveness. Limitations were presumed to be the consequence of: programs targeting only a single mechanism i.e., decrease risk factors, increase protective factors; affecting only single rather than multiple routes i.e., child, or family; the duration of interventions were not long enough; and did not start early enough. As a consequence, two-generation

programs have been developed that work with both parents and children, offering both family support and parent skills training. These programs typically start earlier, some even prenatally, and continue longer, e.g., into grade school. Two-generation programs have demonstrated positive child and family outcomes that have been maintained and significant, although as of yet, undervalued financial returns. The effectiveness of two-generation programs, however, are themselves limited by other social factors such as income distribution, single parenthood, and employment standards that are not addressed by targeted interventions that significantly affect healthy child development.

Implications

Applying a population health approach to the study of healthy child development has a number of significant policy and practice implications. First, recognizing that the first few years of life are a critical or sensitive time for the development of valued capacities requires that we target intervention, prevention, and promotion efforts to families and children during this phase of development. Second, recognizing individual capacities and coping skills as a key determinant of health directs our attention to building skills and abilities that we value. The valued capacities identified in this paper can focus intervention, prevention and promotion efforts. Third, awareness of other more distal factors that determine healthy child development requires that other policies and practices address such issues.

It was concluded in Chapter 2 that multiple strategies are required to improve the healthy development of all Canadian children. Programs need to be accessible to all families, not just those living in conditions of poverty because the majority of children that go on to have physical, mental, social, and/ or legal difficulties are from the middle

class (McCain & Mustard, 1999). These strategies involve integrated services to children and families that build on their inherent strengths.

Children and their families live within a larger social structure that includes environmental, employment, and social policies, standards, and practices. These policies, standards, and practices influence determinants of health such as income and social status, social support networks, education, physical environments, health services, employment and working conditions, gender, and culture (Health Canada, 1999). Consequently, environmental, employment, and social policies, standards, and practices need to be addressed simultaneously.

Enhancing Healthy Child Development through Natural Teaching Strategies

The purpose of Chapter 3 was to examine how important capacities develop, and to use this information to devise intervention or promotion strategies. The development of self-efficacy, emotional regulation, language, problem solving skills, and social skills were selected for examination. These capacities were selected as they represent important dimensions of a thinking, feeling, and acting social organism and are considered necessary for meeting personal and share goals.

The chapter began with a discussion of different models of early child development. One model, referred to as complex interactionism, was endorsed. This model characterized development as an interactive process that involves progressively more complex reciprocal transactions between an active and evolving bio-psychological organism and the structure of persons, symbols, and objects in her or his immediate environment (Sameroff & Fiese, 1990, 2000). Consequently capacities emerge as

children actively observe, imitate, negotiate, and practice the routines, concepts, and skills that surround and involve them.

The role of parents in the developmental process was highlighted as infants' early experiences with the physical and social environment typically occur in the context of the family. When adult and child interact in such a way that there is a sharing of focus, purpose, roles, and/or emotions, they are said to be jointly engaged. Episodes of joint engagement are considered powerful learning opportunities because there is a coupling of novice and skilled interactants (Tomasello & Farrar, 1986). Parents, therefore, must both motivate their child to participate in shared endeavors as well as use these episodes to teach new knowledge, skills, and abilities.

These two parental roles, motivating and to teaching were operationalzed through two engagements strategies: contingent responsiveness and scaffolding. Both theory and evidence regarding how these strategies operate to enhance children's development of self-efficacy, emotional regulation, language, problem solving skills, and social skills were examined. Based on such theory and evidence it was concluded that applying both contingent responsiveness and scaffolding strategies during parent-child interactions had the potential to build multiple capacities simultaneously regardless of the age or developmental level of the child.

Given the potential of these strategies to enhance healthy child development a further purpose of Chapter 3 was to present a comprehensive intervention approach to teach these strategies. The Natural Teaching Strategies approach (McDonald, Kysela, Alexander, & Drummond, 1996) was therefore presented. The Natural Teaching Strategies approach (NTS) is a parent training intervention geared to provide parents with

knowledge and skills to contingently respond to their children's behaviour and interests, and to scaffold their learning. The intervention manual is organized into five chapters, the first four of which were discussed in terms of specific knowledge and skill objectives.

Implications

The identification of simple yet powerful strategies to engage infants and young children has considerable implications for policy and practice. Policy implications include the potential for public service and educational brochures, radio, and television programs to teach, model and/or support the use of these strategies. Child-care and teacher education programs could also incorporate these strategies within their curricula, and in-services could be developed for those working with young children in the field.

Practice and repeated exposure are often required to generalize and perform learned skills, consequently, teaching contingent responsiveness and scaffolding strategies to children and adolescents before they become parents is essential. The educational institutions of our country need to prepare its citizens for their roles as parents, role models, and mentors, not just to enter the work force.

Practice implications involve ensuring that parent-training programs incorporate knowledge regarding healthy child development, and developmental milestones. Furthermore, these programs should emphasize how involving children in positive interactive experiences promotes their development of valued capacities. Finally, parent-training programs should specifically teach contingent responsiveness and scaffolding strategies, and provide opportunity for modeling and practice.

## Parent Training: Can Intervention Improve Parent-Child Interactions?

Chapter 4 reported the results of a randomised control trial of a parent-training intervention aimed at improving the quality of parent-child interactions, and indirectly, enhancing protective capacities among at-risk children. Participating children were at-risk for mental health problems due to poverty and/or their parents' lack of educational attainment, and single parenthood. Twenty-nine families participated in the research study. Results suggest that intervention parents changed their behaviour in interaction with their children in ways that were consistent with the intervention objectives.

### Implications

Parents are a primary socializing agent and the ways that parents engage their infants and young children has been demonstrated to be related to healthy child development. Evidence supports the importance of contingently responding to infants' and young children's behaviour and interest and to using episodes of joint engagement to scaffold children's learning. The results of the research study presented in Chapter 4 suggest that parents can be taught such strategies, and that their behaviour in interaction with their children can be changed in ways consistent with the teaching objectives. Future research is required to examine if these behaviour changes are maintained.

No child behaviour changes were observed. Given that assessment occurred immediately after intervention, child behaviour and development changes may require more time to take place. Future research, involving longer-term follow-up is required to examine what cognitive, social, emotional, and or behaviour changes in children occur as a consequence of intervention, and if these changes are maintained.

The parent training intervention was conducted by skilled and trained interventionists within families' homes under controlled experimental conditions. Research is required to examine alternate routes of parent training. Possible examples include parent groups, individual family sessions in families homes or in a clinical setting, or as an add on to other family support initiatives where the teaching objectives are not the only purpose of contact e.g., family support workers addressing many issues of family functioning and where parenting skills are modeled and discussed when the need or opportunity arises. Within these various approaches, issues regarding staff training and ability need to be examined and comprehensive program evaluations are required to examine issues of efficiency and effectiveness. Finally, all parents involved in the intervention study presented in Chapter 4 were considered at risk. As mentioned previously, characteristics of families may affect intervention outcomes. If the parent training objectives presented in this study are important for all families, examining the interactions between family characteristics and treatment operations and outcomes is essential.

## Summary of Implications

Due to the importance of early life experiences to the formation and development of valued capacities, policies and programs should target young children, their families, and communities. The desired outcome of these efforts should be that children have well developed and integrated physical, cognitive, social, and emotional capacities necessary for them to engage in socially valued activities and meet personal and shared goals.

Parents are a primary socializing agent because early child development typically takes place within the context of the family. Teaching parents strategies to engage their

children in ways demonstrated to enhance valued capacities is a potentially powerful way to promote healthy child development. Two strategies, contingent responsiveness and scaffolding, have been demonstrated to facilitate the development of valued capacities and so constitute important strategies to promote healthy child development. Research conducted in this dissertation demonstrates that parents can learn and apply these strategies. Future research is required, however, to explore the most effective and efficient modes of teaching these strategies and to examine their impact on the development of valued capacities.

Time, financial, social, and personal resources affect how parents engage their children over and above specific knowledge, skills, and abilities. Parents need to be supported in their parenting roles. Intervention and promotion efforts, therefore, must also address family strengths and needs and societal factors that impact families and children.

In Canada we have a long history of provincial and community initiatives and investment in early child development. What has evolved since most of the initiatives were started for specific problems is a patchwork of programs primarily for treatment, rather than an integrated system of high quality centres for early child development and parenting that is readily available and accessible to all young children and families.

> In view of all the points, it is our view that an evolutionary approach to establishing community-based early child development and parenting centres should be adopted which builds on existing community initiatives. We should use this approach to establish, over time, centres available and accessible to children from all sectors of our society. Because of the

> importance of the early years and the need for support from all sectors of society, the framework for development and incentives should be designed to involve governments and the public and private sectors in communities (McCain & Mustard, 1999, p. 18).

There is a need for collaborative interdisciplinary research and programming encompassing health promotion, prevention, intervention, and treatment. It is clear that in the area of family health the scope of potential action required is broad, and for some families the need is severe. The challenge will be to utilize the Canadian definition of health that acknowledges the role of health determinants (social support, growth and development, education, adequate shelter, freedom from violence, sustainable income) in combination with the Canadian values (efficiency, performance, equality of access, prevention, freedom of choice, compassion, and flexibility) operationalized in the five principles of the Canada Health Act (universally available, equality of access, comprehensive, portable, and publicly administered) to address the network of factors that influence the health of families and consequently, their developing children.

Promotion efforts need to do more than just improve direct service delivery and practice. Civic level factors exert either positive or negative influences on individuals. The quality of schools, communities, and places of work affect healthy child development and should therefore be considered within the broader scope of health promotion efforts. Federal level policies, standards, and practices that influence primary determinants of health need to be addressed simultaneously to provide the macro

environmental conditions to sustain positive results from two-generation child development enhancement programs (Health Canada, 1999).

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